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LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

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LECTURE XXXI.

ON THE MUSCULAR SYSTEM OF THE ARTICULATED CLASSES.

The movements of the *entozoa* are extremely slow, even when powerfully excited, and the imperfect development of their muscular apparatus corresponds with the low condition of their nervous system. The fibrous structure of their muscular system is obvious in many of the intestinal worms, and is apparent also in all the higher classes of articulated animals. The fibres in these classes are nearly as colourless as the blood; they are distinct, especially when acted on by heat or by alcohol, but they are still soft, and have very slight connexion with each other; they are less fibrinous in their composition, and less intimately united by cellular tissue, than in higher classes of animals, but more than in the lower. Where the exterior covering of the segments of articulated animals is of a firm and unyielding nature, the muscular fibres and fasciculi which move those segments are disposed in the interior chiefly in longitudinal and oblique directions; but in those which have the exterior covering of the body of a soft and elastic consistence, as in intestinal worms, the contractile fibres are placed longitudinally and more transversely. The longitudinal and transverse muscular fibres we have seen in the tubular membranous feet of the echinoderma, we again find to have the same disposition on the long cylindrical bodies of the nematoid or filiform entozoa.

Although no muscular filaments are perceptible on the neck or on the sac of the cystoid worms, as the cysticercus and coenurus, they possess that slow contractile power which we have seen to be a common property of the cellular homogeneous substance composing the body in most of the inferior classes, where no fibrous structure exists. The complicated apparatus of the head, the suckers, the recurved spines, and the long slender processes, seen on the anterior extremity of the body, both of the cystoid and cestoid entozoa, the hydatids, and tape-worms, possess greater contractile power and extent of motion than the other parts of their body. In the depressed, flat, leech-like forms of the trematoid worms, as the distoma so common in the liver of cattle which have fed on recently inundated pasture, and so much resembling enlarged planariæ, we observe greater irritability of the whole body than in the former groups, without muscular fasciculi being yet developed. In the long cylindrical bodies of the acanthocephala and nematoid worms, the transverse fibres of the outer layer (*Fig.* 125, 1) immediately beneath the tough elastic skin of the body, do not go continuously round the body, but pass in a very interrupted manner, interlacing with each other, and forming an outer muscular layer of short detached transverse irritable fibres (*Fig.* 125, 2);

Fig. 125

so that if you examine the surface with a lens, you may perceive, through the trans-

parent, dense, exterior, homogeneous integument, which gives elasticity to these worms, and which is the analogue of the more solid skeletons of higher articulated classes, a white striated layer of these transverse filaments. On looking at it in that way, it might appear as if they were circular fibres passing completely round the body. But upon examining it more closely,—and there is an obvious reason for this,—there is not a single filament which goes round, but each fibre only goes a short distance. So that the whole of this transverse muscular coat consists of parallel short filaments, disposed almost close to each other, so as to form a continuous muscular coat. From the exterior integument itself being a soft, elastic, tough substance, destined to give tenseness and form and protection to the body of the worm, those apparently circular fibres must have a myriad of insertions, in order that they may act, not on one side only, or on a few points of the exterior integument, but on almost every point of this exterior elastic tunic, so that when the worm acts by its transverse fibres, it draws the whole exterior close together, and contracts the body equally throughout. That is the structure of the outer stratum of muscular filaments.

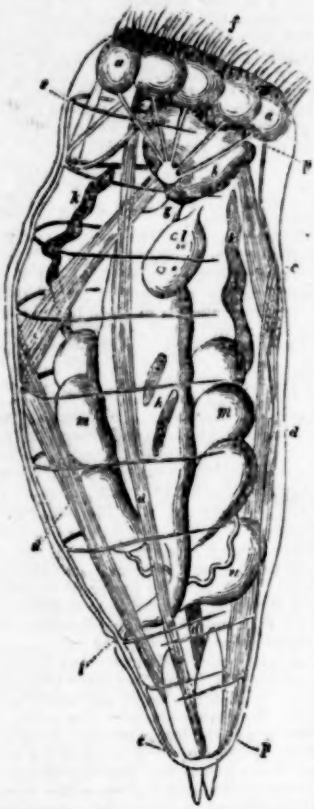
When however you cut open the worm, and look down upon its inner surface, you observe no such arrangement as those transverse fibres. The fibres then presented to you (*Fig.* 125) are disposed longitudinally in four distinct bands (*Fig.* 125, 1), and these longitudinal filaments have the same short interrupted form (*Fig.* 125, 3). You will see them magnified in the figures before you of the *ascaris lumbricoides*, by Bojanus and by Cloquet. In this way the muscular coat of these cylindrical nematoid entozoa consists, generally, of an interlacement of these short interrupted fibres, one series transverse and one longitudinal—the transverse occupying the outer surface, the longitudinal the inner, as in the tubular feet of echinoderma.

There are no distinct segments yet developed in those worms. If there were distinct segments, what would be their influence on these muscular fibres? In place of having these irregular longitudinal filaments, without any definite points of the body for their insertions, they would all be inserted into determinate parts of the segments; but as the whole of the exterior coat is equally elastic, and equally requires to be everywhere acted upon, it has innumerable insertions of the longitudinal filaments, as well as of the transverse. It is therefore where the body begins to be more regularly divided into numerous small segments among the annelides that you have that beautiful, regular, and symmetrical disposition of the longitudinal, transverse, and oblique muscular fibres, which we can trace with great uniformity upwards through the higher articulated classes, with more dense and more regularly jointed skeletons. The mouth is generally provided in the entozoa both with organs of suction and with organs for fixing the body, or abrading the surface to be sucked. When these organs around the mouth are divided into lobes, the longitudinal muscular fibres of the inner layer are observed to divide into distinct fasciculi, which are directed forwards for the motion of those organs, as we see repeated in the leech for the motions of its teeth. The entomoid worms, most frequently found adhering to the external surface of the body of marine animals, present the most articulated forms, and the most complex organizations of this class. Their organs of attachment, as in the *lernæa*, present distinct longitudinal muscular fibres, as also the strong jointed maxillæ developed at the sides of the mouth, and they exhibit the most quick and varied movements, to the extent allowed by their organs of attachment. This greater muscular development of the entomoid entozoa corresponds with the more elevated grade of their nervous system and of their organs of sense, and with the more extensive aeration of their surface, by their external position on the animals whose blood they suck. Those which are entirely buried in the fleshy substance of other animals, or in their internal viscera, require little muscular development, and little power of locomotion, from their food being always at their mouths.

There is another small class of those helminthoid articulated animals, in which we observe the exterior integument still soft and transparent, and still with very little trace of transverse ring-like markings. Those I allude to are the *rotiferous* animals, which are frequently still placed, from their minuteness, among the infusory animalcules. In these very small rotiferous animals, we observe that the muscular fibres are not only distinctly visible, but that there are distinct muscular bands, in which the continuous long fibres have a direction parallel to each other, and terminate on definite points of the body, for the motion of particular organs. We see in this wheel-animalcule, the *hydatina senta* (*Fig.* 126), many of those muscular bands (*Fig.* 126, *d*) passing down longitudinally from the head, nearly as we saw in the large holothuria. Those act with great power longitudinally, in contracting,

in different directions, the whole body. You will observe, also, that at the anterior part of the body there are distinct round ligaments passing towards the base of the circular muscular masses (*Fig.* 126,

Fig. 126



a), at the free or anterior extremities of which circular or spherical lobes, are disposed the little vibratile cilia (*Fig.* 126, *f*). Those ligaments serve to keep in place the moving vibratile organs, and the globular parts themselves are the muscles which are considered as subservient to the circles of vibratile cilia. Those animals, as we observe, are provided with strong mandibles, a single pair, one on each side, but presenting numerous parallel teeth, which give a serrated margin to the whole of the jaw; these maxillæ are moved by very powerful muscles (*Fig.* 126, *b*), forming the large lobed mass of the mouth. You will observe that at each side of the maxillæ there is a large muscular apparatus forming a lobe, and forming thus two great muscular masses, which appear to be destined solely to move the transverse jaws. These maxillæ, from their density, are capable of bruising the soft and minuter forms of animalcules upon which the animal feeds. There are also strong muscles (*Fig.* 126, *c*), disposed so as to retract the whole of this oral apparatus further into the body of these various wheel-animalcules, as you see represented in these enlarged views of Ehrenberg.

In this minute transparent wheel-animalcule, the *hydatina senta* (*Fig.* 126), you observe a complex internal organization accompanying its high muscular development. There are 17 muscular lobes (*a*) for the motions of the cilia (*f*) around the mouth. The whole muscular apparatus (*b*) of the maxillæ and the mouth are retracted by longitudinal muscles (*c*) which pass obliquely backwards, and the whole body can be forcibly retracted towards the tail by several logitudinal bands (*d*) of muscular fibres extending the entire length of the animal. The large supra-œsophageal ganglion (*o*) is accompanied by other four ganglia around the œsophagus, and abdominal nervous filaments (*p*) are seen extending longitudinally on the inferior surface, as in other articulated classes. The narrow œsophagus (*g*) leads to a long and capacious stomach or digestive canal (*h*) containing numerous minute animalcules, species of *navicula*, and the anus (*i*) opens at the dorsal surface of the body. The longitudinal dorsal vessel (*e*), as in most articulata, follows the median line, and gives off numerous lateral branches in its course. Two glandular sacs appear to pour their secretions into the œsophagus or mouth, as the liver of crustacea into the pyloric end of their capacious stomach. The two ovaries (*m*) form large lobed organs on each side of the stomach, and open by one orifice into the cloaca, behind the rectum, and two long, narrow, glandular sacs (*l*), considered as male organs, pour their secretions into a large membranous vesicle (*n*) placed behind the cloaca.

Thus you perceive we derive, even from the muscular system of those very minute beings, the rotiferous animals or the wheel-animalcules, a further reason for placing them higher in the scale of animals than they are generally allowed to occupy. They move rapidly through the waters by the rapid vibrations of those circles of cilia disposed on the anterior part of their

body, which, when in action, appear to the eye like wheels in continued revolution, and by these same motions they bring the animalcules to their mouths, which serve them for food. They have also numerous analogies with the articulated classes of animals in their dorsal vessel, their nervous system, their lateral maxillæ, and other parts.

The muscular system is still more distinctly developed, and more complicated in the cirrhopods, the motions of which, especially of the long jointed cirrhi, are performed with great regularity and force. These articulated animals, from their exterior multivalved testaceous appearance, not from an analogy discovered in the structure of the enclosed animals, have been generally placed among the molluscous classes of animals. They are surrounded externally by a fleshy muscular lining immediately within the shell itself which encloses the articulated body of the animal. The animal is placed upside-down in the pedunculated shells you look upon. The same is the case with the sessile *balani*, and with all the other cirrhopods. The part that projects from the shell consists of the articulated members, extending from the sides of the post abdomen, that part along the anterior surface of which you can perceive the knotted nervous cords extending; and the branchiæ are placed at the base of the legs, as you see in most of the crustaceous animals, so that they are moved by the motions of those cirrhi or curled organs. When we examine the structure of those organs like articulated feet, we observe them to be beautifully articulated from the one extremity to the other, and the articulations diminish in size gradually, from the base towards the apex. There are tufts of little bristles extending from their convex surface, which are very short, but there are long and large bristles developed from their concave surface. We observe that these very minute cirrhi, extending from the concave surface of the larger organs, are also themselves jointed, and that from those cirrhi we perceived other cirrhi developed, but the microscope can scarcely go further. Now if all those parts have the blood distributed equally through them, they must present an immense respiratory surface, and there are some reasons for all those being considered as respiratory organs. In the living state of the animal it is employed constantly and regularly, when in the water, in extending and retracting this pectinated part of the body, as if for the aeration of the blood. In the posterior part of the cirrhoped is placed the strong transverse adductor muscle of the shells. The long peduncle by which they are suspended from the shell is itself contractile, and has an interior muscular tunic, although you can scarcely perceive an appearance of muscular fibres in it through its translucent exterior ligamentous coat. The interior of this long fleshy peduncle is lined with a cellular structure. The exterior integument is tough and coreaceous, and when the animal is contracted it becomes opaque, and it is often of a dark colour, as you observe in this specimen, especially in the part next to the shell. The young individuals which you here observe adhering to the surface around the parent's shell and peduncle are not growing from the body of the parent, but are merely sticking to the surface of one of the shells as they would to a rock, or plant, or beam of wood, in the sea.

Now we can scarcely perceive the disposition of the muscular system in these extremely minute articulations, but from examining the structure of articulations which are analogous to them in form, we can see, as in insects and in crustaceous animals, that those muscular fibres are disposed in parallel fasciculi; not converging at their extremities, and tapering to be inserted into a small tendon, but continuing parallel to each other throughout their whole extent from their origins to their insertions. The operculum which you observe complicated in the sessile species, is moved by a distinct muscular apparatus, and can be kept closed with considerable force; it requires to be constantly opened, however, before the animal can extend these jointed and pectinated organs. They have no power of escaping from the shell, and moving to and fro, any more than the other entomostracous articulated animals. Among the microscopic crustacea, this entomostracous form is very common, but we are more surprised to see it in these larger articulated animals, the cirrhopods, from the rarity of that form in the larger animals of this articulated division. The whole of the convex dorsal part of the enclosed animal is covered with crossing muscular fibres, which pass off in numerous separate fasciculi, to be attached to the inside of the proximal or closed part of this multivalve shell. These draw the animal quickly and forcibly back into the shell after its body has been projected for respiration or for food. The haunches of the jointed members, and the base of the proboscis also, receive muscles from this dorsal part of the animal, for their varied movements, and they continue into the separate joints of the cirrhi, to an invisible minuteness.

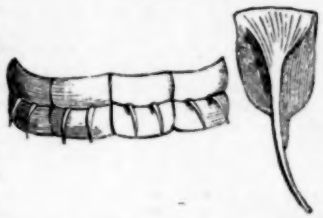
In the class of *annelida*, or red-blooded worms, we observe many animals that have

an articulated body, and even articulated members, and which are often enclosed in calcareous shells. This we have seen in speaking of the skeletons of the serpulæ. We have seen that these animals secrete a calcareous shell of the same composition as that of the multivalved cirrhopods, the carbonate of lime and animal matter, formed in layers deposited the one within the other. We have seen many others of these worms in tubes, from which they can readily extend their body for respiration and food, like the former class.

Many of these worms are quite naked, as the leech and the earth-worm, and we observe great uniformity in their organs of motion, and generally in their muscular system, whether they be tubiculous or naked. They present a distinct muscular tunic of a complex structure immediately beneath the outer skin, and intimately united to it, besides the muscular fasciculi appropriated to the motions of the lateral bristles which project from muscular sheaths. This muscular covering is resolvable into several layers, and each of these into innumerable separate fasciculi, the exterior of which have an oblique or a transverse direction, and the most interior generally a longitudinal course, as we have seen in the entozoa, and even in the tubular feet of the echinoderma, and in the tubular peduncles of the eyes of the snail. These longitudinal muscles are generally divided more or less into distinct bands by perceptible longitudinal separations, as we saw in the four longitudinal bands of the *ascaris lumbricoides* among the entozoa, and even in the strong longitudinal muscles under the skin of the *holothuria* among the echinoderma, and the longitudinal muscles of the *actinia*, which so much resembles an isolated polypus of a large caryophylia among the zoophytes. This complex exterior muscular tunic in the annelides appears to act on the intestine and the other abdominal viscera, as well as on the external rudimentary small close and numerous segments to assist in progressive motion. The exterior layer of muscles is sometimes double, the one consisting chiefly of oblique fasciculi, and the other of transverse, and both exterior to the longitudinal fibres. When we examine these muscles minutely, we find that they are arranged with great regularity, and that those of one minute segment so perfectly resemble those of another segment, and even in different species of these worms, that the study of those of a single segment affords a key to those of all the rest, and even to their general disposition in the segments of the trunk in the larvæ of insects, in myriapods, and in all articulated classes. The common organs of locomotion in annelida consist of bristles, which extend sometimes singly, as you see in this *stylaria*, and sometimes in great fasciculi, as you see in this sea mouse, or *halithea*, and in this *pleione* from the Indian seas.

In the common earth-worm they extend from the body in pairs. Each segment of that animal (*Fig.* 127. 1) has, ex-

Fig. 127



tending from its margin or articulation, four pairs of those organs of progressive motion; but in the earth-worm they have a curved form, and terminate in very sharp points (*Fig.* 127, 2). You require the lens to see them in this worm, but you can feel them very well with the fingers. Thus there are eight of those curved spines, pointed and tubular, disposed between each pair of segments. They are disposed in such a way as to constitute on each side of the earth-worm two longitudinal series, so that there are four longitudinal series of organs for progressive motion along the whole sides of the body. Thus we find those burrowing animals provided with the means of advancing from the earth, or the canal in which they rest, and of retracting themselves with great velocity, when they are alarmed, into the holes they occupy in myriads in the soft soil of all continents. Now those tubular organs of locomotion are surrounded at their base generally by the muscular apparatus that moves them, so that they are placed in a muscular sheath (*Fig.* 127, 2); but there are some of those articulated animals in which, if you examine them with care through a magnifying glass, you can perceive that those members which extend from the sides of the body are regularly articulated, and that they are tubular, enclosing, as in the cirrhopods, their motor muscles; that they have distinct joints along their course. In them we can distinctly perceive that the joints are susceptible of motion upon each other, which compose those apparently simple bristles extending from the segments, as in the nereides. But even the ap-

pendices developed from the last segment, and also from the first, exhibit an articulated tubular structure, enclosing the motor muscles. Those parts are not only moved at their base by muscular apparatus, but they have, distinctly, in their interior soft parts, which alone appear to have influence on the motions of these jointed members. This leads us gradually to the condition of the muscular system in articulated classes with articulated members, where those jointed members have assumed such large dimensions, that we consider these classes as constituting one great and distinct division extending through the myriapods, the insects, the arachnida, and the crustacea. But you observe that all those annelides are susceptible of most extensive and rapid motion, both when creeping upon a solid surface, and when swimming freely in the water. They move in the water by the serpentine motions of their whole body, produced by the combined actions of all the muscles of the segments. They move in the water also by extending and communicating rapid motion to those long lateral bristles which are sheathed in muscular fasciculi, and then serve them, like the legs of a myriapod, in motion upon the ground; they serve the function of those articulated members, although they possess a much simpler structure of solid bristles.

Thus we see that those articulated members of the articulated classes are developed by their gradually enclosing the muscular substance, in place of their being continually surrounded by it, as in the lowest of the helminthoid classes, where the general arrangement is to have the muscular system disposed on their outer surface, like a fibrous irritable sheath around the base of the several setæ which extend solid from their sides.

In the common earth-worm the longitudinal layers of muscles are placed, as usual, within an exterior transverse series, which lie chiefly on the line of junction of the segments, and within a middle layer consisting of oblique fibres. These longitudinal muscles are chiefly confined to the dorsal and ventral surfaces of the body, where they form layers extending the whole length of the body. The muscular sheaths of the feet, for their extension and retraction, consist chiefly of radiating fibres which extend from around the base of these hollow spines. The lips of the mouth are also provided with numerous circular and longitudinal muscles, specially appropriated for their various movements, and the anus is provided with distinct levator and sphincter muscles proceeding in a radiating and in a circular manner around that orifice. There is thus great uniformity and great simplicity in the general disposition of the muscular system for progressive motion, in these helminthoid classes of articulated animals, from the elastic filiform entozoa to the most elevated of the annelides; and the principal differences they present are modifications dependent on the development of various appendices from the sides of the segments, and on the consolidation and regular limits and articulations of these segments throughout the body.

On looking at the general disposition of those muscular fibres within the soft rings or segments which still surround the annelides, we find that they form a tunic, which appears to consist merely of a simple layer of irritable substance. The more consolidated the rings, the more distinct is the fibrous and muscular appearance, the more regular the origins and insertions of the muscular fibres and fasciculi, and with the more precision and effect do they act upon those rings. We do not observe, in the higher condylopodous articulata, those muscles passing across several segments, and inserted into a third or a fourth or a more distant segment, as we find in the minute segments of the annelides, and as we find exemplified in vertebrata, as, for instance, in the case of the intercostal muscles of the serpents, which give a very extensive motion to the ribs of that vertebrated class of animals; and serve there, as in the articulata, for progressive motion. Here, in the insects of Linnæus, each segment appears to have a muscular apparatus, almost in every respect like the segment which succeeds and precedes it; but that can scarcely be yet expected or traced in the annelides, where this symmetry is not yet completely established. We see it most distinct in the firmer articulated animals, where the exterior integuments have acquired much greater density, both from the chitine and from the phosphate or the carbonate of lime. Now by the same means that the naked earth-worm moves through its tube in the soil, the tubiculous animal moves upwards and downwards in the tube it inhabits or secretes; it is by the motions of those lateral bristles which it secretes, extending from the sides of its body through small apertures, like the spiracles of insects.

In the myriapods, as in the worms, we observe a remarkable equality in the development of the segments, from the first to the last; and there is some uniformity even in the number of the segments; but the character which we observe here, marking an inferiority in the myriapods among the articulated animals with articulated members, and marking the re-

semblance which they bear to the annelides, is the want of distinct regions of the trunk, and the equality of the development of all those locomotive appendices of the segments. Those segments give origin to small articulated tubular members inclosing the muscles, and which are nearly equally developed from the one extremity of the body to the other; therefore you perceive there is no reason here for the development of a thorax, as in insects, with its large muscular apparatus. There are no larger members and wings here, which require a greater muscular apparatus to be developed in certain segments than in others: there are no enlarged members here, extending from the sides of a particular part of the body, which require greater nervous energy in these segments than in others; therefore, there is no necessity here, more than in annelides or other worms, for the greater development of the soft parts of any particular segments more than of others; and they are thus equally developed, with their contained muscles, in the myriapods. It is therefore analogous to a worm, both in its general, flexible, lengthened, subdivided form, and in the equal degree of development of its muscular apparatus and of its members, extending from the sides of the segments, like setæ from an annelide. But where it is necessary to have wings and powerful muscular apparatus to carry the animal through the air in pursuit of food or safety, there must be such strength and magnitude of the segments as will afford attachment for those muscles which that part of the body then requires.

Now it is beautiful to observe this in passing from the myriapods upwards. The larva of an insect is like a worm, but it has only thirteen soft segments equally developed. There is no reason why this larva should have its caudal segment, or should have its cephalic segment, larger than the segments of the abdomen, and, therefore, in this first condition of its existence it is uniform in its dimensions like the worm; but when the members destined for another and more active kind of life begin to develop and shoot from the side, according to fixed and regular laws, then we observe that corresponding with the wings and legs required, and with the size of the muscles that are to move them, the segments and their internal muscular laminæ assume particular dimensions and forms.

There is so great uniformity in the muscular system, that in anatomizing the insect called *cossus ligniperda*, LYONNET took that animal in the larva state, and he soon perceived such sameness in the segments, that he could arrive at a knowledge of the disposition of the muscles by taking one layer of them in one segment, and having ascertained the origin and insertion of each muscle in the outer layer in one segment, that segment being, of course, almost rendered useless for further inquiry by the dissection of the first layer, and in tracing the muscles throughout their whole extent, he perceived that the next segment contained precisely the same muscular apparatus. He could, in fact, perceive, what muscles belonged to the different segments, by thus anatomizing merely the muscles on one side of one segment of the animal, and arrive at the same knowledge he might have acquired by taking so many different larvæ, and anatomizing all their numerous segments for the same object. Thus it is that he was enabled to dissect, in a few specimens, and to represent in the small compass of a few plates, more than four thousand muscles which occur in that caterpillar, and no two of his figures resemble each other in the muscles of the successive segments. This is in consequence of his having represented different sets of muscles on the different sides of the same segment, and different muscular layers in each succeeding segment of the insect's body.

These muscular fasciculi, consisting of very distinct dense highly irritable fibres, sometimes run longitudinally, as in most of the outer stratum. Many of them, lying deeper, assume an oblique direction downwards and inwards, and downwards and outwards, some passing beyond the whole length of a segment. The action of all these layers of muscles in the insects is to move the segments in every possible direction, like those of fishes on the exterior of the column. There is here great uniformity in the disposition not only of the muscles of the segments of the trunk of the body, but in the extremities and other appendices, for they are also covered with hollow, tubular, jointed rings, the muscles of which are attached to their interior. In the helminthoid classes and in the larva state we see only the trunk of the body, with its segments and muscles, yet developed, as in the eels and tadpoles and serpents among the vertebrata, and in the perfect insect the developed tubular members only repeat the structures already developed in the trunk. The circular segments of the long branched antennæ of the crustacea repeat the segments of the worms; the same is seen in the tubular joints of the palpi, and in most of the jointed appendices of crustacea and other articulata.

The muscles of the trunk of crustacea and other articulated animals with articulated members, like those of worms, are

divided longitudinally into bands, occupying chiefly the dorsal and the ventral aspects of the body, and these are again divided by the dorsal vessel above, and the nervous chord below, on the median plain; and, as in the vertebrated classes, none of these symmetrical or voluntary muscles cross this middle line of the body. They are connected through the medium of the skin to the solid coverings of the segments, so that the exuviable skeleton is cast off in all these classes, without affecting the insertions of the muscles into the true skin. In these magnified views of the dissections by Lyonnet of the muscles of the caterpillar, you observe that in each of the segments the largest and the longest muscles are the four longitudinal columns on the dorsal and on the ventral surface; these cover the whole course, and the insertions of the shorter and smaller oblique muscles. We observe numerous fasciculi, possessing every degree of obliquity, and many muscles in each segment, which run in a transverse direction. The muscles of the neck which move the head are the longest, and you observe them diverging downwards, and passing over several segments to take a lower insertion. In all the articulated classes where the segments of the trunk are not materially modified by the form or magnitude of their appendices, we observe the muscles of the segments of the trunk to have a great resemblance in their form and arrangement to those in the larvæ of insects, and in the more perfect annelides, because they have the same functions to perform. The muscular fibres, in parallel and almost unconnected fasciculi, are commonly inserted, in the extremities and other appendices, into tendons formed by folds of the exterior dense integument prolonged inwards. We have seen these internal folds to be very large and numerous in the region of the thorax, especially of crustaceous animals, for the insertion of the powerful muscles which move the haunches of the legs. The great irritability and strength of the muscles, and their action on the skeleton, require the articulated animals with articulated members, to have not only the exterior skeleton solid and strong, but also the tendinous parts prolonged inwards for muscular insertions. A worm could not fly, though it had possessed wings, nor the larva of an insect, from the soft and yielding nature of their skeleton for the attachment of the muscles to move these wings, nor could a shark walk upon the ground with legs, for the same reason. The muscles of the wings, like those at the base of the second and third pairs of legs, have their fixed attachments to the internal laminæ of the meso and the metathorax, and these segments of the thorax, therefore, vary in magnitude, according to the muscular strength required in the members. The study of the myology and the general anatomy of insects, and of all the articulated classes, is best commenced with the larger crustacea, where all the common parts present themselves on a great scale. The muscles of the extremities of the perfect insect, as you observe in these beautiful magnified views of the muscles of the *melolontha* or cockchafer, given by M. Straus, agree remarkably in their forms, their attachments, and their general disposition, with those of the scorpion, the crab, or the lobster. In all, you observe the flexor and the extensor muscles of the joints to arise from the whole inner surface of the exterior solid tube, and to be directed in parallel fasciculi to a single flexor, and a single extensor tendon, each of considerable length, and over the whole surface of which their fibres are inserted,—the flexor muscles and tendons, especially in the pincers or last opposable division of the tarsus, being larger than the corresponding extensors, and arising generally from the inner surface of the exterior part of the member. The caudal, long, cylindrical segments of the scorpions are chiefly occupied with muscles to wield the sting with force and precision. The strong muscles of the post-abdomen of the crustacea, especially of the macrourous species, enable them to swim backwards, by quickly and powerfully inflecting the expanded tail.

The numerous moveable appendices developed from the segments of the head, as in this of the *melontha vulgaris* (*Fig.* 128), and the varieties of their forms,

Fig. 128

in articulated animals, give occasion for a complex and varied disposition of the muscles in that region. But in moveable parts, which are common, we still observe great

uniformity in the active organs of their motions, as in comparing the muscles of the jaws, the antennæ and the palpi of the perfect insect, with those of the larger crustacea. In both you observe the strong and large tendons of the adductor muscles of the mandibles (*Fig.* 128, and *Fig.* 129), or powerful inner pair of jaws, and the large conical muscles, descending from the upper surface of the head to be inserted into these tendons. The abductor muscles are comparatively small. The muscles of the base of the antennæ and those of the maxillæ also present the closest resemblance. The interior of the maxillæ, as of most other appendices, is filled with the flexor and the extensor muscles of their ginglymoid joints. And you observe that the whole interior of the large mandible (*Fig.* 129, *a*), and the minute articulations of its attached palpus (*Fig.* 128, 129, *b b*), are

Fig. 129

alike filled with the parallel fasciculi of muscular fibres, passing inwards from the sides of these tubular parts, to be inserted over the broad surface of the flexor and extensor tendons. A muscular mechanism of a similar nature is found in the ginglymoid articulations of the tubular appendices throughout the rest of the body of these and almost all articulated animals with articulated members. So that while the muscular system is varied in its minuter details in each particular form, the general plan and disposition of the whole are continued with remarkable uniformity and simplicity throughout this immense division of the animal kingdom.

In the diagnosis of a disease, where it is doubtful whether the pain or other local affection be the effect of *inflammation* or of *irritation*, the question is immediately determined by placing the patient upright, and bleeding to syncope. In inflammation much blood flows. In irritation, very little. There is, in my opinion, no single fact in physic of equal importance and value, in the diagnosis of acute diseases, and the use of an important remedy.—*Marshall Hall on Diagnosis.*

AN INTRODUCTORY ADDRESS

TO A COURSE OF LECTURES

ON BOTANY,

Delivered, April 14th, 1834, in the School of Medicine, Peter Street, Dublin,

By EDWARD MURTA, M.D.

The delivery of a course of Lectures is usually preceded by an abstract of the history, objects, advantages, and means of learning the science proposed to be taught. I see no good reason for deviating from this usage, while there are many for recommending it to general adoption. On turning our attention to the acquisition of any branch of knowledge, we are naturally desirous of becoming acquainted with its origin, the matter of which it treats, the benefits we are likely derive from its cultivation, and the manner in which we are to proceed in its attainment: in short, we are anxious to obtain a general view of its outlines, before entering on the labour of studying its details. By thus glancing over the field we have to travel, even in this partial and imperfect manner, we are less liable to commit errors in the subsequent steps of our progress, and can pursue our course with more confidence and greater hopes of success.

Yet it is to be regretted that the gratification of a desire so natural and so rational should be attended with difficulties which are equally felt by the student and the teacher. The absence of previous knowledge of the subject on the part of the former must render attention at first painful, for it is well known that we seldom derive pleasure from what we do not thoroughly understand; while the latter is compelled to presume the student to be in possession of information which he has not yet acquired, and to make statements which pupils cannot comprehend. Thus our wishes outstrip our faculties: but perhaps we should be more moderate in our wishes: the most brilliant talents must submit to toil and time for their indulgence: the possessor of them I believe can no more take in at a single glance the compass of an extensive and complex science, than the best informed and most experienced analyst can condense its multifarious objects into one satisfactory view.

These preliminary observations I have thought it prudent to make in order to guard against such expectations as have just been alluded to; I feel them to be

the more necessary on an occasion which places me in the performance of a duty now attempted by me for the first time.

The History of Botany will not detain us long. As a science it may be said to have been totally unknown to the nations of antiquity. The Greeks, who have left us so many splendid productions in other departments of literature, have left us little worthy of notice on this subject. Some works they have no doubt produced on the subject of vegetables; but in them we cannot discover even the germs of the modern science of botany. Their crude attempts at classification and description scarcely deserve the name of science, and could be of little use to any except those who are already acquainted with the objects described. Their deficiency in this respect is the more remarkable, as they undoubtedly paid the greatest attention to agriculture and horticulture; and encouraged those arts by several acts of protective legislation, amongst which the laws exempting the plough and other implements of husbandry from sale and seizure, and imposing the severest penalties on the destruction of olive trees, are remarkable instances. Their mythology, too, abounds with many illustrations of their taste for the beauties of the vegetable kingdom, as well as of the deep sense which they entertained of its utility to mankind. We are much more indebted however to their moral deities for splendid imagery and beautiful poetry, than for any steps towards reducing botany to a useful science. It would appear indeed as if men of the most intellectual cast may long enjoy in the highest degree of perfection the fruits of the earth without being excited to the study of the laws of vegetable life, or awakened to the utility of reducing to some system the tribes of plants within their reach. Even in our own times, in which botany has made such rapid advances, and in which it is so generally studied, the majority of persons employed in the business of husbandry are totally ignorant of the most obvious laws of vegetable physiology, and any attempt to explain to them the sexual properties of plants, or the process by which the seeds daily passing through their hands produce some of the most important articles of human subsistence, would be met by a smile of incredulity.

If we turn to the remains of Roman literature, we shall be equally disappointed in our search for anything approaching to what we mean by "botany" in modern times. Like the Greeks, whose arts and literature they servilely copied, they saw the vast national importance of patronizing agriculture, and like them, too, had their prose and poetical writers on the use and cultivation of vegetables. In a botanical point of view these works are equally uninteresting as the compositions of which they are imitations. I need only observe that so little were the true principles of botanical description known in those times, that the mere denomination of the particular plants treated of by the writers of that age, has conferred a degree of reputation for learning and ingenuity on those modern commentators who have succeeded in this troublesome, and I may add unprofitable, undertaking. On this account, the Natural History of Pliny, the Georgics of Virgil, and other Roman works which treat of vegetables, often appear obscure to the modern reader. Were not, in fact, the plants of which those authors write known traditionally, we should be, in general, quite at a loss to know of what vegetables they were speaking. Unless, therefore, I were to detain you with biographical notices of such writers, or to occupy your time with idle disquisitions on disputed points of their writings, I can discover nothing in them to throw light on the origin of the science of botany.

The writings of the physicians of those ages on vegetables are not more satisfactory than those of the unprofessional authors to whom I have just alluded. So indefinite and unsatisfactory are their descriptions of plants, that the identity of many of them is still a matter of dispute among men who have undertaken the difficult task of reconciling their accounts with modern observations. It is quite obvious, therefore, that one of the most important ends of botany, the certain recognition of a plant from description, was entirely unknown amongst the nations of antiquity—a discovery of which modern times may be justly proud, and which has contributed so much to the amusements, instruction, luxuries, and necessaries of life.

It was not to be expected that a subject which had attracted so little attention during the brilliant epochs of Grecian and Roman literature, should have flourished at a period when even the great lights of those times may be said to have been extinguished, or that it would be one of the first to which attention would be paid on the revival of letters. We may accordingly pass over the dark gulf of the middle ages, in which we should search in vain for attempts to improve on the labours of the ancient writers. In the literary productions of those times, which may be said to share in the darkness in which they originated, the name of the science scarcely appears. The

crucible and the alembic were assiduously applied in the mystic laboratory of the alchemist; the scalpel was profitably employed in some of the most important discoveries of anatomy, under the guidance of a SERVETUS and a HARVEY; but the vegetable kingdom was still an unexplored wild, without a labourer to collate its contents, to discover its properties, or to reduce it into an intelligible system.

The fate of botany, however, though delayed, could not be deferred much longer with convenience to society. We can, at least, point to a combination of circumstances preceding its improvement, which may be safely said to have led to that desirable event. Amongst these the universal spirit of inquiry into the laws of life and of matter, which succeeded to the revival of letters in Europe, holds no doubt a first place. It was natural that in the philosophic investigation of the objects around us, and which commenced about that time, so important a department of creation as the vegetable kingdom could not long be neglected. The very ignorance, indeed, which so universally prevailed on the subject at the time, must of itself have acted as a stimulus to exertion. Besides, the phenomena of vegetation being totally unknown, as well as the true anatomical structure of vegetables, no means existed by which plants could be discriminated from each other for economical or other purposes. Catalogues and indexes, with descriptions of the appearance and properties of plants, were compiled, but they could be of no use to any except to those by whom the plants were already known. If to this state of things we add the introduction of a vast number of vegetables found in newly discovered countries, and which were previously unknown in Europe, we arrive at a crisis when it became imperative on philosophy to interpose its luminous wand, and to remove this scene of darkness and confusion. For the accomplishment of this important object LINNEUS was destined - a man from whose extraordinary powers of mind botany experienced more than compensation for the apathy and incompetency of its previous advocates. In his plastic hands the science assumed a form of beauty and utility which may be said to have fascinated almost every philosopher in Europe. No other discovery was ever perhaps honoured by so rapid and extensive a popularity as that which bears his name; it spread throughout Europe with a celerity which appears almost magical, and was received by the learned with scarcely a dissentient voice. Its extreme simplicity and efficiency as an artificial contrivance for ascertaining the name of an unknown plant, won over thousands to the study of the vegetable kingdom, who might never have turned their attention to the subject but for this happy invention. The successful result of the labours of this great man is not without a moral, when we consider the difficulties opposed to it by the subject and by his personal circumstances. Many had already failed in the arduous task he proposed to execute; he had not only to lay the foundation of the structure, but to execute every other department of it with his own hands. To facilitate the accomplishment of this great task he did not happen to be born in the lap of affluence, or amidst the gorgeous scenery of the luxurious soil and climate of the south; he was the child of a poor clergyman, and was born amidst the bleak hills and comparatively scanty vegetation of Sweden. Of books, collections of rare plants, and all other materials of study which are calculated to inspire and gratify a taste for his favourite science, he was destitute; the cottage garden, containing a few medicinal herbs, and the necessarily circumscribed library of a Swedish minister, were the only scientific resources of that man in early life, who subsequently inscribed his name on all the living things that move or have being on this earth.

The science, after the publication of his system in 1734, was placed on a firm basis, and although imperfect in many respects, could neither retrograde nor be neglected. The impulse which its study received from the genius of LINNEUS, was continued by numerous writers of first-rate abilities. It would accord neither with the limits nor the design of this essay, to notice the labours of even the principal of those authors. One exception, however, I must make, with respect to the venerable name of JUSSIEU, - a man who, after LINNEUS, has certainly done most to improve and extend the cultivation of botanical science. Unlike LINNEUS, however, he had the difficulties neither of fortune nor of locality to contend with. His nativity was cast, not under a single propitious star, but under a galaxy of the most favourable circumstances. Born amidst a refined and scientific people, surrounded by all the advantages which a government profuse in its patronage of literature and science could create, he subsequently became the inheritor of the labours and instructions of an uncle who had bestowed forty years of his life in organizing the beautiful system of botany which bears his name, but for which his nephew alone gets credit with

posterity. His abilities, however, were equal to the opportunities which he possessed; and the splendid use which he made of them leaves us nothing to regret that such advantages fell into his hands. The trite but inapplicable objection to the method of LINNEUS, that it separates into different classes plants having the closest affinities with each other, was completely avoided in his system, in which the individuals of the vegetable kingdom are affinitively arranged into natural families, and hence called the natural method, in contradistinction to that of LINNEUS, which is avowedly artificial, and which should be considered exclusively in this light when brought into comparison with other arrangements of the vegetable kingdom. Upon this plan of the natural grouping of kindred plants, the great work of JUSSIEU, the Genera Plantarum, was published in 1789, and still continues the basis of all those improvements and modifications of it which have since been attempted. Such, apparently, is the solid foundation on which this system at present rests, that I have no doubt but it will remain the model of all attempts of this kind in future; and that however particular parts of it may be altered or improved, it will still retain, under every change, that impress of truth and genius which it received at its birth. It does not come within the scope of an address of this kind to institute a comparison between the merits of these celebrated systems, which have been too often brought, as I think, into unnecessary and invidious collision; neither is it compatible with the design I have proposed to myself, to enter more minutely into the principles on which these systems are founded. When the occasion arises for the performance of this duty, I shall be prepared to point out their respective merits, and endeavour to give you the advantages of a knowledge of both,—a plan, indeed, which I conceive not only practicable in the same course of lectures, but which I look on as imperative on every teacher of the science.

The publication of the works of these two illustrious individuals constitutes the two great epochs in the history of botany; since their time its progress has been rapid and brilliant beyond precedent in the cultivation of any other science. I should here willingly pass in review the names and writings of some, at least, of the benefactors of botany, but such an undertaking would carry us far beyond the design of this address. As the few names, however, which have been cited, are all foreign, you are not to conclude that the science was neglected in Great Britain; it was there cultivated with much success by many able botanists. The splendid works of SMITH will ever be associated with the flora of these islands, as correct and classical descriptions of the genera and species of which it is composed. Of the botanists of our own days, there are many of European celebrity; the names of BROWN, HOOKER, GREVILLE, and LINDLEY, are known in every country in which the lamp of science sheds its light. "Botanicorum facile princeps" is the just compliment paid by the celebrated traveller and naturalist Baron HUMBOLDT to Mr. BROWN, whose writings have done so much honour to his country, and so much extended our knowledge of the vegetable kingdom. In the works of these authors you are sure to meet with information of the most valuable kind, and with models to excite to rivalry, or invite to imitation. Having thus pointed out those features in the history of the science which appeared of most interest, I shall proceed to a short consideration of the objects and advantages of Botany.

The objects of botany are only bounded by the limits of the vegetable world, and the means by which it may be rendered useful and instructive to mankind. If botany were but a collection of hard names and ingenious speculations, contrived for the amusement of the idle as it has been sometimes sarcastically defined, it would be unworthy of the name of science, and the attention of rational beings. The slightest consideration, however, of the proper subject of the science, is sufficient to dissipate this vulgar calumny. The importance indeed of the vegetable kingdom, in the scale of creation, can scarcely be overlooked by the shallowest observer. The extent, variety, beauty, and utility, of the individuals of which it is composed, have been duly appreciated at all times by mankind. Thus everything around us bears testimony to the benefits conferred on us by this department of animated nature. The fixtures and furniture of our dwellings—a considerable proportion of the apparatus by which all the useful arts are exercised, and by which persons and property are conveyed from one place to another—a great part of our food in health, and of our medicines in disease—a vast number, in short, of the necessaries and luxuries of life, acknowledge the vegetable kingdom as the bountiful source whence they are derived. To illustrate these remarks, it is only necessary to point to the national importance of attending to even a few of the items included in the copious catalogue of the vegetable kingdom. Our forest trees, on the existence of which so much of the stability of our buildings and our navy de-

pends, are familiar instances of this kind. It may be said, no doubt, that we might have good oaks and elms without botany; that, no doubt, may be true; but as there are many species of these which differ very widely from each other in their properties, it is of some importance to be able to discriminate the good from the bad, a duty which comes within the province of botany. Having casually alluded to the forest trees, I may observe, in further illustration of this point, that there are in these islands two species of the oak, growing indigenously; one of them furnishing wood of the most durable kind, while that of the other is comparatively worthless. Having examined these species in the living state, the quercus pedunculata and quercus sessile flora, I can say, from my own observation, that no one, except a practical botanist, would be able to distinguish one from the other; yet, on the discrimination of such minute shades of character, obviously depends all the benefits derivable from the cultivation of the one, and all the losses and disappointments resulting from the propagation, planting, and use of the other. Various examples of the same import might be adduced; it is impossible, indeed, to say what might have been the beneficial consequences to society, had the same care been bestowed on the improvement of our forest trees, by crossing, cultivation, and propagating, from the best species or varieties, as was successfully practised on esculent and ornamental plants.

If we turn to the natural family of the grasses, we shall find them of still greater utility to mankind, being, in some countries, indispensable to human existence. To this extensive family belong all the corn plants, such as barley, oats, rye, wheat, maize, and rice, besides the fodder grasses which supply nutriment to all the gramnivorous animals. Of the economical uses to which the four first of these plants are applied in Europe it is unnecessary to speak, as they must be known to all; in large tracts of the continents of Asia, Africa, and America, maize and rice support a still greater proportion of the human race. There is no other substance, indeed, on which so many human beings subsist as on rice, which constitutes almost the sole food of myriads of beings in the east. To this family also belongs the sugar cane, the produce of which is of such immense commercial and economical interest; there is not one, in fact, of the 1800 or 2000 species of which this vast natural group of plants consists, from the *agrostis algida*, the humble but hardy tenant of Spitzbergen, to the *panicum spectabile*, which attains to the gigantic height of seven and eight feet on the banks of the Amazon, that is not of interest in the soil and climate where it vegetates.

Whatever is not minutely observed, however, seldom awakens our attention. We are so much in the habit of enjoying the produce of this tribe of plants as a matter of course, as well as the produce of most of our fruit trees and garden vegetables, that we rarely inquire into the manner by which they have been brought to such perfection. Yet there can be nothing more certain than that the pampered sparrows of the modern farm-yard would despise any one of the luxuriant grains around them in their wild state, and that those grateful and beautiful fruits which are now so common as to excite little curiosity, were originally neither more luscious nor agreeable than the fruit of some of the same genera still found in our hedges. It is with garden vegetables as with the sloe and the plum. Swine would turn away from the hard and sapless root of the original of the garden carrot, growing wild in every direction; and every person who has read the writings of Mr. KNIGHT, of Ludlow, must be familiar with the improvements made by him in some of these articles, and the ingenious manner of conducting such experiments.

Nor is it for food alone we are indebted to the vegetable kingdom; much of the raiment of the inhabitants of the temperate zones, and almost the whole of that worn by those of the tropics, is derived from the same source; witness the extraordinary productiveness and consumption of the produce of the cotton plant, which is now an article of use in every country almost of the globe. To this may be added, the woody fibres of the flax and hemp plants, which, as articles of domestic and commercial convenience, could scarcely be dispensed with at present. In other countries nature has given substitutes for these plants; the *musa textilis* supplies the material out of which is manufactured the well-known and much-esteemed muslins of India; while the leaves of other plants of this family (musaciæ) are of such size and texture as to be employed for thatching Indian cottages, and as substitutes for tablecloths.

From the vegetable kingdom are also derived much of our dye stuffs; it is only necessary to mention the names of indigo, archil, quercitron, bark, logwood, &c., or, in short, any other of those vegetable substances which are much employed in the art of dyeing, to excite curiosity with respect to the plants from which substances with such singular properties are derived.

To these may be also added various spices.

I have hitherto spoken of the economical uses of plants. The application of them to medicinal purposes is, as you are all aware, both extensive and highly advantageous to society. Out of so many articles described in our materia medica, a majority of them is derived from the vegetable kingdom. Numerous as this catalogue appears, it bears but a small proportion to the number of vegetables medicinally used in other countries. There is scarcely a disease incident to the human race for which the vegetable kingdom has not furnished, I will not say a panacea, but some supposed lenitive. To those, indeed, who have not been in the habit of reading works appertaining to the natural history of plants in foreign countries, the number of vegetables medicinally used would appear incredible. It is not, however, by the number of the vegetables employed for this purpose (for I conceive that many of them might be rejected even from our pharmacopœias) that we ought to form an opinion of the utility of attending to their source; but by the undoubted value of many of them as agents in the treatment of disease. The powerful and salutary properties of many of them when judiciously employed are so well known, that I feel it would be pedantry to point them out individually on an occasion like the present, when I am merely dealing with generalities.

The subjects on which the practice of botany falls, and which have been hitherto pointed out, were selected as familiar instances of the importance of the science. But what is common often escapes observation. The eye, from the dawn of infancy, is reconciled to the marvellous scenes around us, and may finally close without examination of their wonders. 'Tis the unseen, and perhaps unheard-of, productions of distant climes which strike the imagination with most force, and awaken our curiosity with most certainty. Perhaps there is no department of nature in which examples of this kind might be sought after with greater chance of success than the vegetable kingdom,—not excepting the animal kingdom, which would be more likely to excite our interest, from its closer affinity with ourselves. No naturalist, if I recollect rightly, says the celebrated Humboldt, on touching the shores of tropical America, can ever forget his admiration and surprise on first beholding the extraordinary vegetation of those climes. There the vegetable may be said to more than divide the spectator's interest with the animal kingdom. The eye turns with wonder and delight from the sparkling variety of its insects, the fearful beauty of its snakes, the brilliant plumage of its birds, the strength, number, and agility of its quadrupeds, to the grandeur and diversity of the massy forests with which we have nothing at all comparable in the European landscape. There vegetation attains its acme of luxuriance; the forest tree, unscathed by northern chills, shoots up to an elevation, and assumes a massiveness of character, almost pyramidal, carrying along with it a numerous train of climbing plants whose ascent is only checked by the limits of the gigantic boughs and branches on which they are borne into the air. Let us take a single example of the useful and the interesting among plants from this repository of the wonders of the vegetable kingdom. For this purpose the natural family of the palms presents itself at once to our notice. The race of plants to which the name of palms has been assigned, is, no doubt, the most interesting in the vegetable kingdom, if we consider the majestic aspect of their towering stems, crowned by a still more gigantic foliage; the character of grandeur which they impress on the countries they inhabit; their immense value to mankind, as affording food, raiment, and numerous objects of economical importance; or, finally, the prodigious development of those organs by which their race is to be propagated. A single spathe of the water palm contains about 12,000 male flowers. *Alfonsia amygdalina* has been computed to contain 207,000 or 600,000 on a single individual, while every bunch of the seje palm of the Orinoco bears 8000 fruit. While some of them, *kunthia montana*, &c., have trunks as slender as a reed, or, like *calamus rudentum*, longer than the longest cable, being 500 feet; others, as *jubia spectabilis* and *cocos butyracia*, measure three to five feet in diameter. While some have a low stem, as *attalea amygdalina*; others exhibit a towering trunk, from 180 to 190 feet high, such as the *ceroxylon andicola*; and while one part flourishes in the valleys of the tropics, another part consists of hardy mountaineers bordering on the limits of perpetual snow. Wine, oil, wax, flour, sugar, salt, says Baron Humboldt, are the produce of this tribe; to which Von Martius adds, thread, utensils, weapons, and habitations.

Of the whole tribe the most remarkable is the cocoa-nut. The various uses to which every part of this singular plant is applied may be thus stated. The root is masticated as a substitute for the areca-nut; of the small fibres baskets are made in Brazil; the hard case of the stem is converted into drums, and used in the

construction of huts; the lower part is so hard as to take a high polish and to resemble agate, and the reticulated substance at the base of the leaves is made into cradles, and sometimes into a coarse cloth. The unexpanded terminal head is a delicate article of food; the leaves furnish thatch for dwellings, materials for fences, thickets, and baskets; they are used for writing on, and make excellent torches; potash is yielded in abundance by their ashes; the midrib of the leaf serves for oars; the juice of the flower and stems is replete with sugar, and is fermented into wine, or distilled into a spirit called arrack. The value of the fruit for food, and the delicious beverage which it contains, are well known to every European. The fibrous rind makes the coir rope, and the kernels yield an excellent oil by expression. In short, there is not a part of this extraordinary plant which is not applied to some economical purpose.

The other members of this family we find, many of them, of almost equal utility. Thus the palm oil is the produce of the *elais guinumensis*; the ceroxylon andicola has its stem covered with wax, which exudes from spaces between the insertion of the leaves. Sago is yielded by the stems of nearly all palms, but especially of the *sagus* and *phœnix farinifera*. The grateful fruit of the neat palm furnishes a considerable portion of the food of the inhabitants of the Mediterranean coast of Africa. The importance of this tribe of plants to the inhabitants of those countries in which they are found cannot be overrated; and if we turn to any other considerable natural family of the vegetable world, we shall be equally successful in discovering objects to excite our interest and our curiosity. From the *gymnema lactiferum* the Cingalese obtain a milk which they use for food; a similar product is procured in South America from the famous cow tree, or *palo di vacca:* in the same country the exhausted hunter and traveller relieve their thirst with the cooling and grateful liquor supplied by the young stems of species of a reed called *taquarussa*; even the sterility of the desert would seem to be overcome by the bounty of the vegetable world, which supplies, in the succulence and secretions of some plants, a resource for those wants and appetites which an arid plain and burning sun are calculated to create. The adaptation of plants, indeed, to the soil, the climate, and the necessities of animals inhabiting the same regions with themselves, is one of those facts which strikes us with most admiration in reflecting on the general harmony of the universe. Out of the myriads of the animal kingdom formed for subsisting on vegetables, there is not one of them for which its food is not abundantly provided; wherever these animals are found, there too will be discovered the plants on which they live. Hence, in tropical and warm climates, innumerable means of satisfying the wants of those places are found in a variety of fruits and other vegetable productions, not known in higher latitudes, in which the consumption of animal food being greater, the plains are spread out into luxurious meadows and pastures, in which numerous flocks supply this necessary of life. To this law, the illustration of which by examples would be an interesting but impracticable duty in an address of this kind, there is no exception, from the cooling properties of the *cucurbitacea*, so profusely supplied in warm countries, to the minute but useful family of the lichens of the north, to a single member of which, the *cenomyce rangiferina*, or nindur moss, as it is improperly called, the hardy Laplander is indebted for his support.

The distribution of plants in accordance with the welfare of animal life is in no instance, perhaps, better exemplified than in the curious manner in which vegetable antidotes, if they may be so called, are provided by nature for the poison of disease generated in the vicinity of those places where they are found to grow. The cinchona forest of South America would seem to be particularly provided for the alleviation of the class of diseases to which that country is particularly liable; but it is not to the three or four spices of the genus cinchona alone with which we are medicinally acquainted in this country that the inhabitants of the American continent are indebted for all their means of combating the diseases to which they are exposed, as several genera of this family, possessing properties similar, though inferior, to the tree cinchonas of Peru, are used for this purpose. In Brazil *cinchona ferruginea*, *vellozii*, and *remijiana*, are employed for the same purposes as the Peruvian bark. In French Guiana, *portlandia*, *hexandra* is employed in like cases. Species of the genus *exortima* supply the *quinquena pilon* and *quinquena des Antilles*, which strongly resembles the properties of the true cinchonas. At Sierra Leone, a fever bark is procured from the *rondeletia febrifuga*. A bark of the same nature is obtained in Carolina from *Pinkneja pubens*. Various instances of the same description might be selected from the floras of other countries, even from that of our own, in which we find the, no doubt, comparatively feeble flowers of the *sallcine*, developed with the miasmata of intermittent fever in the same marsh,—the

general habitat of this tribe of plants, one of which, the salix Russelliæna, or Bifford willow, has been stated on good authority to cure that disease.

The noxious qualities of many individuals of the vegetable kingdom present a striking contrast to the picture with which we have been hitherto engaged. Why these mortal things should find a place in the vegetable kingdom any more than venomous snakes should form an item of the animal world, is a question on which neither science nor philosophy has yet shed any light. It is our business indeed to investigate their properties rather than to challenge their presence in creation; and there are few topics better calculated to repay our trouble, for though deadly as poisons, some of them are extremely valuable as medicinal agents, thus verifying the old adage *ubi vis, ibi virtus*. The noxious properties of our native vegetable poisons convey no idea of the fatal virulence of some of those found in foreign countries; they are as far surpassed in this respect by their congeners abroad, as the sting of our indigenous nettles are exceeded in their effects by the *urtica cunulata* of India, the sting of which is said to produce symptoms resembling those of tetanus; and, in one instance, to have lasted several days. From this source the savage of different countries derives the materials of those deadly poisons which make the wound of his arrows mortal. With the inspissated decoction of the root of *hæmanthus toxicarius*, the Hottentots of the Cape of Good Hope poison their weapons. An unknown tree, but supposed to belong to the natural family artocarpeæ, supplies the Nagas of India with a poison for similar purposes. The dangerous consequences of wounds inflicted in handling or working the African teak-wood, employed extensively in shipbuilding, are presumed to depend on some properties of the wood itself, which is conjectured to belong to the family of *euphorbiaceæ*, well known for containing many injurious plants. The famous manchineal tree, *hippomani mancinilla*, is reported to almost realize the fictions about the upas of Java, as it is so extremely poisonous that persons are said to have died from sleeping under its shade.

Innumerable instances of a similar kind might be adduced; but I presume enough has been stated to show the necessity of a science which teaches us how to turn to advantage, or to avoid, the evil effects of those apparently anomalous agents of the vegetable kingdom.

The organization and philosophy of plants furnish us with subjects of interest little inferior to those afforded by their economical properties and uses. Constituting an assemblage of beings different from animals, but agreeing with them in many particulars, they exhibit in a strong light the wonderful laws of vitality, wherever it is found to exist. So closely indeed do the phenomena of life, and even the material forms in which they are observed, resemble each other in these two great departments of nature, that the discrimination of the animal and vegetable structure is sometimes attended with difficulty. This, however, only occurs in what the insolence of philosophy has chosen to designate as the lowest grades in both scales of existence; thus it is easy to distinguish the ox from the oak, but as we descend the vital channels in which these divisions of nature run, we meet with living forms whose apparent identity has as yet been separated only by the prism of the imagination.

Whether these two states of beings, the vegetable and animal, proceed in parallel lines during their whole course, or commencing at one point differ only as they diverge, it is certain that in the lowest tribes of each class, such as the *arthrodiæ*, *chaodineæ*, and *entozoa*, it is impossible to draw a line of distinction between the atomic cryptogamia and infusorial animalcules. In the functions performed by certain organs in the higher range of vegetables, a strong resemblance to those observed in animals may be traced, and may be analogically employed for throwing light on each other. Thus, in the stems of flowering plants, is found a vascular apparatus, through which a fluid called sap ascends, and which after being exposed and elaborated in the leaves, which may be said to be the lungs of plants, descends, as proper secretions, to be deposited in cells provided for their reception. Like animals, they have the power of absorption and excretion in an eminent degree; and it is possible that the mechanism employed in both may turn out to be the same.

In vegetables, fibrillæ or minute roots are provided at their extremities with what are called spongioles, the office of which is to absorb fluid, charged with the necessary nutriment of plants, from the earth, and nothing can better evince the design of ingenious contrivance than their formation for this purpose. Thus, over every other part of the plant, with the exception of this and another organ, the stigma, is drawn a thin but dense membrane, called the cuticle, intended to restrict or regulate at least the absorption and exhalation of the plants to which it belongs. On the spongioles, which consist of a cluster of minute open cells for

taking up the necessary support of plants, no such membrane is found, and an extremely ingenious theory for the explanation of the manner in which this office is performed has been constructed, and called *endosmose*, by M. Dutrochet.

In plants, we also have to observe the analogous functions of the absorption and expiration of certain gases, and the transpiration of superfluous moisture, or of their proper secretions, upon the latter of which depends the odour for which many of them are remarkable. The exhalation of a volatile oil from the *heictamnus albres*, a plant belonging to the buchin tribe, is so abundant, that the atmosphere around it in hot weather is said to become inflammable. The pellucid drops which sometimes appear on the leaves of plants in the morning, and commonly known as dew, are, in many instances, the exhalations of the plant itself, condensed into a liquid form by the coolness of night, and the power supposed to be possessed by them of radiating heat.

The presence of a sexual system, in all flowering plants at least, presents another coincident feature in the general similitude of animal and vegetable life; a property, too, the operation of which is, in many respects, similar in both these divisions of nature. In most plants the sexes are united in the same flower, or they are said to be hermaphrodite, and for the obvious reason, that as the contact of pollen of the male organ, or anther, with the surface of the stigma, or female organ, is necessary to the impregnation of the ovary, the propagation of the species might be hazarded if the sexes were confined to separate individuals, which being destitute of the power of locomotion, could not approach each other like animals for sexual purposes. There are many exceptions, however, to this rule, in which the sexes are separate on the same, or on two distinct plants; of the former the oak is a familiar example, the willow of the latter. An analogous exception occurs in the lower tribe of animals, in some of which the sexes are united, as in the common snail.

Something of the same law which regulates the intercourse, and confines the reproduction of offspring, to the species of the same genus or family of animals, may be likewise observed in the vegetable kingdom. Thus it is an acknowledged canon in horticultural experiments, that hybrids or mules cannot be obtained from plants belonging to two different natural families. The success of grafting and budding is entirely regulated by this law, by the knowledge and application of which many of our most esteemed fruits and most beautiful flowers have been produced. Irritability, that property so characteristic of life, will be found to belong to all, and to be curiously active in some vegetables. To this property may be ascribed what has been called the sleep of plants, the expansion of flowers, and those singular movements of certain parts of them which have as yet baffled explanation. Some of these motions depend on atmospherical agency, as the closing and opening of leaves and flowers; others, as the oscillations of the lateral leaflets of *hidysarum gyrans*, of the *labellum* of certain archideous plants, and of some conferræ, would appear to be voluntary, as they are observed to be constant; while the motions of others, as in the well-known sensitive and humble plants, are obviously produced by the touch of other bodies.

The irritability of plants is still further evinced by the effects observed on the application of poisons in a gaseous or liquid form; these agents would seem to act on them nearly as on animals, according to an extended series of experiments by Mr. Turner and Christison of Edinburgh, while the same kind of air which can alone support animal life is also indispensable to theirs. Hence, in the impure air of cities, plants seldom present the same bloom and vigorous appearance which they wear in the country. To this however there are some exceptions, and as we find the necessity for a pure medium of respiration to diminish as we descend in the scale of animal life, so do we find a pure air and light to be less essential to the existence of the inferior tribes of vegetables. Many minute fungi flourish in the midst of putrefaction; stagnant pools, and other impure waters, are the nurseries where some *algæ* come to perfection; even the damp and dark cavern is the chosen abode of others. The genus rhizomorpha, which vegetates in mines, is of this description, and is remarkable for its phosphorescent properties. In the coal mines near Dresden, this species is described as giving those places the air of an enchanted castle; the roofs, walls, and pillars, are entirely covered with it, and dazzle the eye with its brilliant light, which is found to increase with the temperature of the place it inhabits.

In the examination of the mechanism, if it may be so called, by which the phenomena of vegetation are produced, the utmost simplicity of design, combined with the utmost care for the particular wants and habits of plants, will be discovered. Upon this subject the labours of continental botanists have of late shed much

light, and given almost a new character to the science. In proportion as botany has taken an anatomico-physiological turn, what once appeared dark and inscrutable has become easy and intelligible, and science itself has assumed a more analytical and inductive character than it once possessed. In every instance, indeed, to which vegetable anatomy has been extended, it has furnished the most unerring basis for the systematic arrangement of plants, and there is no conjecturing what advantages may yet be derived from its prosecution. To this subject, whoever undertakes to teach, no less than he who proposes to learn, the science of botany, should turn his chief attention; for without a competent knowledge of structure, our information with respect to the vegetable kingdom will be superficial, and, I fear, worthless. The difficulty of this indispensable branch of botanical pursuits should not deter us from its prosecution. Once possessed of this valuable clue, our excursions through the vegetable kingdom become easy and delightful.

Notwithstanding the partial and imperfect reference you have heard made to the vegetable kingdom, it may, I think, be asked, is not this important department of nature worthy of scientific investigation? There can in my opinion be no one, who considers the question in a proper light, to reply in the negative. Even admitting that we could derive all the advantages we just mentioned from the vegetable kingdom, without inquiry, or that those advantages could not be improved and multiplied by science, would it not be a rational object to study and investigate that beneficent and interesting source whence the springs of animal life are chiefly fed? In making this perhaps unnecessary demand, I only claim a portion of that attention for the vegetable which has been so successfully and profitably bestowed on the animal kingdom. A short comparison will illustrate my meaning. Few of you, I presume, have as yet sufficiently studied, or dipped sufficiently deep, into botanical literature, to be enabled to form an opinion on the subject, or to have acquired a taste for such pursuits. Most of you, on the contrary, are sufficiently acquainted with anatomy and its objects, to appreciate its inestimable advantages, and to derive a pleasure from your knowledge of that science.

Now had you only the same knowledge of the vegetable as you have of the animal kingdom, I would venture to assert, that you would be equally willing to admit the advantages and pleasures you derived from an acquaintance with the former part of our system; that you would, in short, experience the same conviction of the utility, and a like gratification from the perusal, of the profound speculations and splendid discoveries of a BROWN, as you all have, no doubt, felt in reading those lectures of Dr. GRANT, on Comparative Anatomy and Physiology, now in progress of publication, and which, whether we consider the labour of collecting and studying the materials of them, or the clear and chaste eloquence with which they are displayed, have certainly no parallel in that department of science in these countries.

The vegetable kingdom, then, in all its various parts and relations, constitutes our subject, and it now only remains to say a few words on the advantages and means of learning the science of botany. In alluding to the advantages of the science, my observations apply more particularly to the natural method or system of studying that science. The advantages of applying botany to useful purposes are immense, especially to medical men, with whose profession the science has been always identified. The knowledge of the properties of one plant is a guide by which the practitioner is enabled to substitute some other with confidence, which is naturally allied to it; and physicians on foreign stations may direct their inquiries, not empirically, but upon fixed principles, into the qualities of the medicinal plants which nature has provided in every country for the alleviation of the diseases peculiar to it. To horticulturists it is not less important; the propagation or cultivation of one plant is usually applicable to all its kindred; the habits of one species in an order will often be those of the rest; many a gardener might have escaped the pain of a poisoned limb had he been acquainted with the laws of affinity; and, finally, the phenomena of grafting, that curious operation, which is one of the grand features of distinction between the vegetable and animal kingdoms, and the success of which is wholly controlled by ties of blood, can only be understood by the student of the natural system. "Botany, then, numbers, collates, and describes, the individuals of one division of animated nature, which, without its light, would be a chaos unintelligible, sometimes useless, and even dangerous to mankind; it points out to us the place which each of these individuals occupies, and their mutual relations to each other, in that lengthened scale of vegetable being whose extremes are bounded by the almost invisible cryptogamia of mildew, and the lofty palm, or still more lofty pines, of North-west America,—to it we are indebted for a knowledge of the manner in which plants are distributed over the surface of the globe, and even under the deep

waters of the ocean, whose flora is said to rival in extent, and to surpass in beauty, that of the earth in many instances. By its assistance we are enabled, in a great majority of flowering plants, at least to determine with tolerable accuracy, the name and other circumstances of a vegetable present, or to form clearer ideas of those of an absent one, from description, than can be formed in any other way,—the science thus obviously supplying the best possible substitute for personal observation of the vegetation of foreign climes. From it we learn not only the external forms, but also the latent mechanism by which the oak matures into the monarch of the forest, and the rose develops its beauty and emits its fragrance; how the humble mosses, or lichens, attach, maintain, and reproduce themselves in situations where the Protean energy of vitality alone is capable by its infinite resources of overcoming the difficulties opposed to their existence.

By the light which it thus sheds on the structure, physiology, and peculiar habits, of plants, we are enabled to select from, and to improve on, the bountiful profusion of the vegetable race provided for almost all the exigencies of animal life, by cultivation and experiment; to convert the austerity of the crab into the grateful acidity of the apple and the pear; to variegate the flower with tints still fairer than its own; and to cull the salutary herb or fruit, from amidst contiguous poisons, or less noxious companions, for the alleviation or prevention of disease. In fine, we have been placed in a garden, full of beauty, full of excellence and interest, but, withal, dark, mystic, and inextricable as a labyrinth. We may, tis true, feast the eye, gratify the taste, and sensually revel on the repast so profusely supplied to us; tis science, however, which, by clearing away the darkness around these objects, and by endowing us with an additional sense, throws new charms over the indulgence of all the rest, makes enjoyment, gratitude, contemplation, religion, and study, a sublime and appropriate homage of that divine Architect who has designed and executed the vast assemblage of beings, amazing in their number as in their nature, from which we derive all these advantages. That science, Gentlemen, is Botany.

Large meals require much rest. "The extreme prevalence of dyspepsia and insanity in America (Combes *Physiology applied to Health*) is probably partly owing to hasty swallowing, and speedy return to business." The remedy consists in *small* meals.

CASE OF DEFORMITY PROBABLY FROM

DEFECTIVE NUTRITION.

By J. R. Smyth, M. D., *Banbury.*

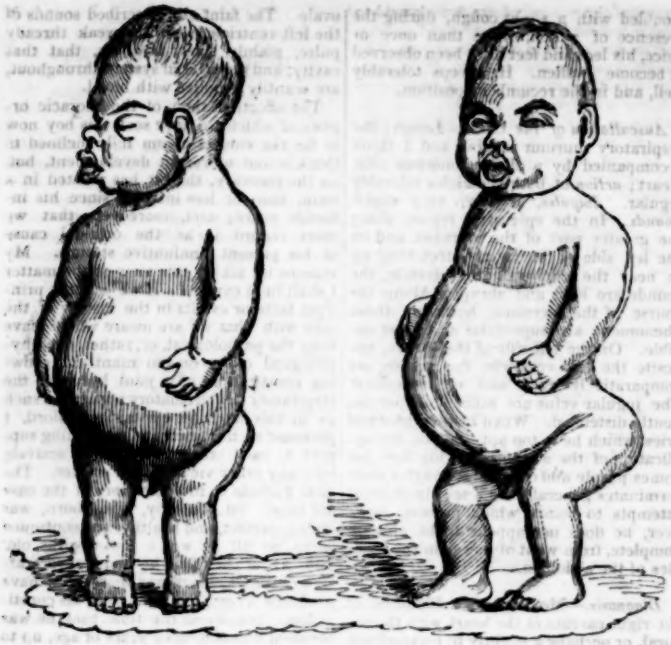
Richard Ayris, who forms the subject of this sketch, resides in a village a few miles from this place. He is now twenty-one years of age, and twenty-eight inches in height. His mother, who has several other children, gives the following history of this extraordinary youth.

She states that he was born at the natural period of gestation, and that he was then a large, strong, and healthy child, and continued to be strong and healthy till he was three or four months old, when he had a severe attack of illness, the nature of which his medical attendant did not comprehend, and which had nearly proved fatal. From that time, as the mother herself expresses it, "the constitution of the child appeared to be entirely altered;" he was always pale, listless, and inactive, but he advanced slowly in growth till he was between two and three years of age, since which time his bulk has been stationary, and he has been in all other respects,—in appearance, health, and habits,—exactly as he is at present.

A clergyman who has visited this boy frequently during the last sixteen or eighteen years, states that he can scarcely observe that any change has taken place either in his appearance or in his intellect since he first saw him.

I shall now give a brief description of the present condition of this individual, more particularly of his internal or pathological condition, from which perhaps we may be able to collect some information regarding the original cause of his diminutive development.

The head and abdomen, as the portrait exhibits, are large, and considerably out of proportion to the thorax and extremities, the latter parts as well as the genital organs being still in their infantile state of development. The head most likely is a little dropsical. The countenance is dull, listless, and abstracted, the cheeks are pale and puffed, the lips are thick and livid, and around the eyes the skin is somewhat blue. The mouth is generally open, and the tongue, which is large and livid, protrudes. When taking food, however, and when desired, he draws in his tongue and shuts his mouth, which, as would be anticipated, gives a considerable improvement to his countenance. He cannot, indeed, keep his mouth shut more



Richard Ayris; *aged* 21; *height* 28 *inches.*

than a few seconds at a time, as this seems seriously to interfere with the function of respiration. The anterior nares are expanded and elevated. He has had but one imperfect set of teeth, eight in the upper jaw, and four or five in the lower, which are now decaying, and falling out. The sutures of the skull are still ununited, and the anterior fontanel is very large. In short, the evolution of every part of the body, both as regards its structure and its volume, is purely infantile. Although almost a man in years, he is still but an infant in organization.

He can stand and walk by holding a person's hand, the chest being at the same time inclined backwards, to balance his large protuberant abdomen. His muscles are soft and flabby, and in all his movements he is exceedingly sluggish. These, indeed, are as slow as those of a tortoise. He is dumb, but his want of speech does not depend upon his being deaf, as is generally the case, for his sense of hearing, as well as the rest of his external senses, is tolerably correct, though abstruse. Memory, the only internal sense which he seems to possess, is stated to be retentive, he recollects any person whom he may have seen once before. His desires are childish, he is amused by all sorts of toys and glittering objects, but, like the majority of his brethren of a higher order of development, money affords him the greatest pleasure and amusement. When presented with a piece he will smile, and return thanks by kissing his hand. He always feels cold, and the hottest day in summer cannot compel him to abandon the fire.

His surface and extremities are dry, rough, and cold to the touch. The pulse at the wrist is just perceptible, between ninety and one hundred, weak and thready, but regular. The stomach and bowels are always irregular. The evacuations from the latter are stated to be, for the most part, fluid and light-coloured. The liver is much enlarged. No evidence of ascites. The urine is stated to be tolerably natural in quantity and quality. He has been, for some years past, at times,

troubled with a slight cough, during the presence of which, more than once or twice, his legs and feet have been observed to become swollen. He sleeps tolerably well, and in the recumbent position.

Auscultation of the Chest.—Lungs; the respiratory murmur is faint, and I think accompanied by a slight sonorous râle. Heart; *action* of both ventricles tolerably regular. *Impulse*, if any, very slight. *Sounds.* In the epigastric region, along the greater part of the sternum, and on the left side of the thorax, stretching up to near the corresponding clavicle, the sounds are loud and abrupt. Along the course of the sternum, however, those phenomena are superficial and most audible. On the left side of the thorax, opposite the left ventricle, the sounds are comparatively weak and circumscribed. The jugular veins are much and permanently distended. When he struggles and cries, which he is too apt to do on the application of the stethoscope, his face becomes purple and congested, and this state terminates generally in a few ineffectual attempts to vomit, which process, however, he does not appear to be able to complete, from want of power in the muscles of the abdomen.

Diagnosis.—Much passive dilatation of the right cavities of the heart, with the natural, or perhaps a slightly hypertrophied, state of the left. Obstruction of the orifice of the pulmonary artery, and patescence, perhaps, of the foramen ovale. Enlarged liver.

Remarks.

What the exact nature of the organic region is, or when or where in the course of the pulmonary circulation the impediment is situated, which obstructs the course of the blood from the right chambers of the heart, it is difficult to determine. The turgid state of the jugular veins, and the loud, abrupt, and extended sound of the right ventricle, clearly show that that cavity is much distended, and that the blood is stagnated in it and in the corresponding auricle and continuous venous trunks.

The enlargement of the liver is a common effect of such a state of the circulation. The sternal sounds, with the general symptoms, lead me to suspect that the orifice of the pulmonary artery is partially obstructed, and that the principal part of the blood makes its way from the right to the left side of the heart, without previously going the round of the pulmonary circulation, and that, perhaps, this takes place by means of the pervious foramen ovale. The faint circumscribed sounds of the left ventricle, with the weak thready pulse, plainly show, however, that that cavity, and the arterial system throughout, are scantily supplied with blood.

The affection, then, of the thoracic organs of which we have seen this boy now to be the subject, I am fully inclined to think is not of recent development, but, on the contrary, that it has existed in a form, more or less intense, since his infantile years; and, moreover, that we must regard it as the original cause of his present diminutive stature. My reasons for taking this view of the matter I shall here explain. If we test the principal facts or events in the history of the case with what we are aware would have been the pathological, or, rather, the physiological effects on the infant and growing constitution, of a joint lesion of the respiratory and circulatory apparatus, such as in this boy now exists, they afford, I presume, such mutual and confirming support to each other that we can scarcely take any other view of the matter. The facts I allude to in the history of the case are these: 1st. The boy, when born, was strong, perfect, and healthy, and continued so to be till he was a few months old. 2nd. About that time he had a severe attack of illness, which was observed to have produced a complete change in his constitution. 3rd. From the time that he was between two and three years of age, up to the present date, his external condition has undergone no appreciable alteration; in other words, he was, eighteen years ago, as far as external observation could detect, exactly what he is at present.

With regard to the second of the above facts, we may safely conclude, I conceive, without much fear of being incorrect, that no lesion or derangement either of function or of organization of any other part of the system, which might have occurred during the early life of this individual, could so immediately and so effectually alter his constitution and arrest its growth, as the lesion of the respiratory apparatus which now exists and which we are now considering. The third fact scarcely requires a remark, but we may observe that since the external condition of this boy has undergone no metamorphosis since his infancy, it is not unreasonable to conclude that his internal condition has been equally unchanging.

This view of the case, I am aware, involves pathological circumstances, which, it must be confessed, are of extremely rare occurrence; namely, to find a child the subject of organic disease of the heart, and also to find that disease, no matter who may have been the subject of it, continu-

ing during a period of twenty years. This latter circumstance, however, I conceive, receives an explanation in the effects of the disease upon the system generally, having acted in a palliative and salutary manner upon the disease itself. The prostration of the circulation of the vital powers, and the early arrest of the development of the locomotive organs, consigned the individual to a passive mode of existence, which of course prevented him from making any sort of exertion that might at any time have accelerated the circulation, and, consequently, aggravated the affection. So that, in this instance, nature has fairly verified the principles inculcated by art, and adopted a complete and rigid Valsalvian mode of discipline, which, though it has not been effectual in working out a cure of the disease, has at least proved useful in retarding its progress and fatal termination. Nature, as it were, has sacrificed the animal system to preserve the organic. I may here observe that it is evidently the want of muscular power in the lips and tongue which prevents this boy from being able to articulate. He attempts to speak, but cannot give the necessary quick motions to those parts.

This case is interesting, perhaps, in another point of view. It presents us, I think, with a fair illustration of a law propounded by MM. Serres, Saint-Hilaire, Beclard, Andral, and others, in explanation of the cause of one class of monstrosities, namely, those from arrest of development. The law is this, "That the absence or incomplete evolution of any part of the system depends on the defective development of the artery which should supply the part with the materials for its nutrition and growth."* In the present case, however, the arteries are present but they do not convey the material (red blood) for the nutrition and growth of the organs and during fœtal life also. I will venture to say, that it is the defective development of the blood (if I may use that expression) which causes the defective development of the arteries; the latter is formed from and for the former. The question then naturally arises, Should this individual be regarded as a monstrosity? and the answer must be in the negative. The period at which the arrest of development took place, having been subsequent to the birth of the boy, precludes him from being ranked under the term monstrosity, it being necessary, according to systematic and scientific language, that a malformation should be congenital to merit that appellation. Is he then to be regarded as a dwarf? No, for the term dwarf is restricted to those individuals whose diminutive stature depends not on malformation or disease, but in a proportionally diminished volume of all the parts of the body. How then is this case to be regarded? As one, I think, presenting us with an example of arrest of nutrition and development in consequence of disease, from early failure of the function of respiration, the effect of organic lesion of the respiratory organs, the heart and lungs.

Considerable instruction may, I presume, be derived from this case in a physiological and therapeutic point of view. Does it not fully and distinctly demonstrate the relation which exists between the development of the function of respiration and the development of the animal system, the system of support and locomotion, the bones, muscles, brain, and nerves? Does it not, too, perhaps, show that the primary and principal cause of rickets (for this, if we confine our observations to the osseous system alone, is a case of aggravated rickets), curved spine, and spina bifida, with various other affections of the organs of support, is to be sought for in some lesion of the respiratory apparatus? I think it does. How necessary then must it not be to be aware of the state of those organs in the treatment of disease situated in any part of the body? Who could vouch to cure a chronic abscess, an indolent ulcer, or cause an ununited fracture to coalesce, without first being aware of the condition of the heart and lungs? We have here full proof, if proof were wanting, that it is the function of respiration which determines the energy of the *nisus formativus*, and that which affects the *formative* power must necessarily, and does certainly, affect the *restorative*, as these are but different terms implying the same physiological action. These remarks call to my mind a case of old ununited fracture of the femur, in a man aged 40, which I witnessed not long since in one of our metropolitan hospitals. For the purpose of causing the ends of the bones to unite, the limb was bound firmly in splints, and the patient was kept some months in bed; his mouth was affected twice with mercury, but all to no purpose; the fracture still continued ununited. He died shortly afterwards, and in the autopsy the lungs were found to be studded with tubercles, and a tubercular cavity was discovered in the substance of one of the lobes. Was it this state of the lungs, then, which prevented an osseous union from taking place?

Banbury, Oxfordshire,
13th May, 1834.

* Vide Andral's Pathol. Anatomy, p. 136.

THE

REMOVAL OF CALCULI FROM THE BLADDER AND URETHRA,

WITH LITHOTRITIC AND URETHRAL INSTRUMENTS,

Described and demonstrated by MR. COSTELLO, *at the Webb-street School.*

To the Editor of THE LANCET.

SIR,—Two lectures have lately been delivered by Mr. Costello, on lithotrity, at the Medical School, Webb-street, before Mr. Grainger's class. On these occasions the lecturer expatiated on the history, progress, and general applicability of this operation, sustaining the interest of his subject throughout.

He dwelt particularly on an extension of the new mode to the removal of fragments of calculi, or small calculi, which have been arrested in their passage through the urethra, and the more so, he said, because precept for the guidance of the surgeon's conduct in such cases had been laid down recently in an erroneous but very authoritative manner. The writer to whom he alluded, in treating of this subject, had stated, that small calculi, or fragments of calculi, resulting from a lithotriptic operation, might be arrested in any part of the urethra, and that the surgeon's conduct with regard to them was to be determined by their situation; all that were posterior to the bulb or commencement of the membranous part of the urethra, were to be returned into the bladder if possible; all that were anterior to the bulb, being within his reach and control, were to be extracted. In the first instance, it was true that it would sometimes happen that the foreign bodies could not be forced back into the bladder, in which case the *boutoniere* or perineal incision was to be had recourse to. Differing as he did *toto cœlo* from this view of the subject, it was but just, that he should state the grounds of his opinion, and this he felt the more impelled to do, as he should at the same time develop a principle which must change our entire practice as regards this branch of the treatment of the calculous affection.

A few months back he was called to a patient of Mr. Griffiths, of Gower-street, residing in Caroline Mews, Bedford-square. Mr. Fairmaner (the patient) was of a gouty diathesis, and had been in the habit of passing small stones occasionally for the last twenty years. About ten years ago he had an unusually sharp attack; he felt as if a stone would come away; there was a good deal of blood passed at the time, with great straining, but no stone was evacuated, and from that period he dated the existence of a stone in his bladder. He had often since passed small stones, but he still felt that the first one remained behind; he could feel it when sitting. Mr. Costello sounded him, and as the catheter descended through the membranous part of the urethra, he felt it grate upon a stone. The bladder was carefully explored, but no stone detected in that organ. On withdrawing the catheter, the same grating was felt in the urethra as upon its introduction. It was then declared to the patient that the bladder was considered to be free from stone, but that there was a stone in the passage. As soon as the patient heard this opinion, he felt satisfied of its correctness, from his own sensations. An attempt was then made to seize the stone in this situation, with a three-branch instrument, but without success. The passage was free enough beneath the stone, which occupied its upper surface, to allow the instrument to be placed in parallelism with it. The branches were expanded as much as the urethra would allow, and slight rotatory movements were made, but the stone could not be made to fall between the branches. Hunter's forceps were also tried,—the stone could be seized but not detached. A spoon-like instrument was also tried, but the stone still remained fixed.

The want of success of these attempts pressed strongly the alternative of the *boutoniere*. The patient, however, had the most decided repugnance to its employment, and asked for a renewal of the former attempts rather than submit to the new one. The operator himself was loath to have recourse to it, except as a *derniere resort*, because a fistulous opening might be the result. The urethra does not heal kindly when a stone has irritated it for a long time, and Mr. Costello, therefore, set upon divising another method. He introduced a bougie, armed at its end with a large knob of wax, and having oiled it well, passed it down to the stone. The wax, softened by the heat of the canal, moulded itself upon the stone, and on being withdrawn, exhibited the form of the stone and its relation to the urethra. With the information thus obtained, he devised the small instrument, which he showed and explained. It was straight, and consisted of two pieces, one sliding in the other, and presenting short crotchets for seizing the stone. The method of using it was as follows:—It was passed down to the further extremity of the stone; the wax mould showed that the stone was held by two folds of the urethra, one holding it posteriorly, the other anteriorly, so that it

was, in a manner, set in the soft parts. The crotchet was insinuated between the fold and the stone, until the operator felt that it was in naked contact with the stone. The other crotchet was then withdrawn about an inch, and being then advanced towards the other crochet, it stopped on the anterior fold. The space separating both was now nearly three-quarters of an inch, and was occupied by the stone and the anterior fold. The object then was to lift this fold on the back of the anterior crotchet. The manœuvre was difficult, but, by correctly observing the measurement, it was effected. The stone was grasped and extracted, and thus the disagreeable alternative of the perineal incision was averted.

The instrument was made to meet this case; but several trials since, and one on a child of seven years of age, fully established its efficiency. Mr. Costello, therefore, felt confident that the precepts to which he alluded would no longer prevail in sound surgery, and as vesical lithotrity superseded to a great extent the incision of the prostate, for stone in the bladder, so, he said, would urethral lithotrity supersede the *boutoniere*, in cases of small calculi or fragments arrested in their progress through the urethra.

On the 25th of April, Mr. Costello operated on a patient in Mr. Grainger's theatre. The stone measured rather more than two inches in diameter. It was rapidly seized and broken. The sitting lasted about three minutes.

On Saturday the 3rd instant the same patient presented himself again, having walked from the west end of the town to be operated on. He had voided a considerable quantity of powder and fragments of the stone since the former sitting. Mr. C. stated that he had not interfered with him since he was last before them, and that the patient had voided two fragments of considerable size that morning. These were shown around. The patient having got on the table a catheter was passed; it stopped at the membranous part of the urethra. "This," said Mr. C., "would have been an untoward circumstance for our operation had it occurred some time back, but if too much has not been said in praise of our little urethral instrument, it will not be an obstacle to my proceeding with the operation now." He then took the instrument, passed it to the stone, and, without seeming to make any search or movement, he announced that the stone was in the instrument, and that he should remove it entire if the patient did not suffer. He then withdrew it gently, and exhibited it to the class. All this was the work of a few seconds, and afforded an illustration of the value of the instrument, and the soundness of the doctrines established upon it. The dexterity with which the operation was performed, greatly excited the admiration of the spectator. The large instrument was then passed into the bladder. Many portions of the stone were rapidly reduced, and the patient walked from the theatre apparently suffering but little inconvenience.

The clearness with which Mr. C. laid down his principles, and the trouble he took to demonstrate them, merited the thanks of the numerous students who attended, and elicited many expressions of gratitude to Mr. C. for furnishing them the opportunity of becoming personally acquainted with a means by which the dangerous and often fatal operation of lithotomy might in most cases be superseded.

I am, Sir, yours truly,

WM. ARCHER,
Student at the Webb Street School.

Borough, May 7, 1834.

CASE OF

DISLOCATION OF THE FEMUR INTO THE FORAMEN OVALE.

By O. B. BELLINGHAM, M.D.,

Member of the Royal Coll. of Surg. in Ireland, and Lecturer on Materia Medica at the School of Anatomy, Eccles Street, Dublin.

In No. 553 of THE LANCET, two cases are given of dislocation of the femur into the foramen ovale, which were reduced at the *London Hospital*, and as it is not a very common dislocation, the following notes of a case (which occurred to me in the country some years ago, and in which the reduction was very easily effected) may be worth inserting, in an early No. of that widely circulating journal.

Hugh Murray, aged about 55, a labouring man, was at work in a gravel pit, near Carrickmacross, county Monaghan, when part of the side, which was undermined, fell in and buried him up to the neck. According to his account he was thrown on his face. I saw him early the next day, when I found that he had a comminuted fracture of the shaft of the left femur, and a dislocation on the right side of the head of the bone into the foramen ovale, the symptoms of which were as follows:—The knee and foot were a good deal separated from the other; the toes were turned out, and the knee was bent; there was a depression where the great trochanter can be felt in the natural state,

and the head of the bone could be felt at the upper and inner part of the thigh, to which place the pain was referred. I could not perceive that the body was much bent forwards, and the shaft of the other thigh-bone being broken, it was difficult to say whether the limb was lengthened.

The reduction was effected by fixing the pelvis by means of a girth placed between the pudendum and thigh, which was firmly held by an assistant (such as I could get amongst the poor man's friends, as there was no other medical man within a distance of some miles); then grasping the ankle of the dislocated side, making a certain degree of extension, and drawing it over the other ankle, when the bone slipped into its socket, with a noise heard by those around, the patient lying on his back during the time.

In this case the diagnosis may be said to have been somewhat more difficult than it usually is, from the comminuted fracture of the opposite thigh, as it could not be well determined whether the dislocated limb was lengthened, and from the almost total absence of the bent position of the body, which Sir A. Cooper has given as one of the first diagnostic symptoms. However, the great separation of the knee and foot from the other, the turning out of the toes, the depression where the great trochanter can be felt in the natural state, the protuberance caused by the head of the bone on the inner side of the thigh, the knee being flexed, and the impossibility of extending it, together with the seat of the pain being referred to the situation of the obturator foramen, left no doubt of the nature of the accident.

I should have mentioned, that before I proceeded to the reduction, I administered a solution of tartarized antimony, but it did not produce the slightest nausea. The whole operation did not take up many minutes, and as soon as it was over he called for his pipe, and seemed to enjoy it as if nothing had been the matter with him.

Eccles Street, Dublin, April, 1834.

MR. SHEPHERD'S

NEW FORCEPS

FOR THE SAFE EXTRACTION OF

STUMPS OF TEETH

To the Editor of THE LANCET.

SIR,—From the extensive circulation of your valuable Journal, especially amongst country practitioners, to whom I would more immediately address my remarks, I am induced to beg of you the favour to give insertion to the following particulars, descriptive of a new instrument for the safe and easy extraction of stumps of teeth, that those who are disposed to adopt it may perfectly understand the method of using it, and the principle on which it rests its claim of superiority over that awkward and uncertain instrument the punch, or its modification, the elevator. These latter, I conceive, have not one good point to recommend them, requiring the greatest caution, even with the most experienced operators; whereas the forceps, which I now employ, are not only free from all the objections against those instruments, but possess many additional and very desirable qualities; in short, they are simple in their construction and application, and perfectly free from danger, even in the hands of the inexperienced. Their principle of action, as will be seen from their shape, is to fit the root of a tooth so exactly that they cannot slip off, cannot, even with firm pressure, break the most hollow stump; and the slightest hold is sufficient to loosen the tooth from its socket.

The blades are gouge-shaped, terminating at the extremities with a cutting edge; *this* I consider one of the greatest improvements in the construction of the instrument, which acts as a gum-lancet at the time of fixing on the stump, with this very great advantage, that *one* operation *only*, instead of *two*, is necessary, and there is no bleeding to obstruct the sight of the operator, as in ordinary lancing of the gum; nothing, in fact, being cut but the slight threads of adhesion between that and the tooth; whereas the common gum-lancet cuts considerably more than is requisite to destroy the connexion between the two. These sharp blades, then, are to be nicely fitted round the circumference of the stump, and gently insinuated down its sides, when a secure hold is obtained, a rotatory motion for the upper, and from side to side for the lower, teeth, will remove it with certainty and ease. They are applicable to all the front teeth, and the separated roots of the molars; the curved instrument will also be found exceedingly useful in removing the lower dentes sapientiæ. The blades of the latter may appear inconveniently long, but in old persons the stumps of the lower molar teeth are often so deeply seated that a shorter blade would not reach them. They may be procured in pairs (the straight for the upper, and curved for the lower teeth) of Messrs. Weiss and Son, instrument-makers, Strand; and to ensure to the profession a correct

instrument, I have undertaken to see that each be carefully finished to my pattern.

Mr. Weiss is in possession of my drawings, and is the *only maker* having permission to use my name, with which, therefore, each pair will be marked.

This plan I have deemed necessary, for unless the blades are very accurately shaped, and exceedingly well tempered, they will not answer the purposes intended. I have found two other pairs requisite, with narrower blades, when a stump is deeply embedded between the two adjoining teeth, and a longer pair, having a curve similar to an italic *f*, for the dentes sapientiæ of the upper jaw.

I have always entertained a very decided objection to the punch, and have devoted much time and attention to endeavour to obtain instead a really useful instrument. Having succeeded beyond my most sanguine expectations, I consider it my duty to make the improvement generally known, that the dread of that formidable operation, the punching out stumps, may be completely done away with. With this view, therefore, I have thus briefly stated the manner of using the instrument, and directed all, who are anxious to avail themselves of its advantages, *where only* the correct patterns are to be obtained. I speak of these forceps with confidence, having now treated the most difficult cases with the most perfect success; and should any professional gentlemen favour me with a visit, I shall feel the greatest pleasure in affording them proof of their superiority over the old instruments, for which purpose I would beg them to select the most difficult cases, for the more difficult the more satisfactory the result. My object is, the simplifying an hitherto very difficult, troublesome, and often unsatisfactory operation, and to discard from use a decidedly unscientific instrument, substituting for it one that I am sure will lessen the sufferings of my fellow-creatures. With the sincerest wish, therefore, that the profession and the public may benefit by my exertions, I have the honour to remain, Sir, your obedient servant,

J. GLASFORD SHEPHERD,
Dentist, M.R.C.S., and formerly articled Student to Mr. Stanley, of St. Bartholomew's Hospital.

53, Baker Street, Portman Square,
May 13th, 1834.

The Engraving, exhibiting a View of the Forceps for Stumps of the Lower Teeth, shows the Length of the Instrument and Form of the Blades, the Extremities of which terminate in a Cutting Edge.

PHYSIOLOGY OF ASPHYXIA.

To the Editor of THE LANCET.

SIR,—As the editor of a distinguished medical publication, I deem it necessary to address you on a subject, which has not only reference to myself, but, in some respect, to medical literature. Presuming it likely that the work on "The Physiology, Pathology, and Treatment of Asphyxia," just published by Dr. Kay of Manchester, may be reviewed in your Journal, I am desirous of putting you in possession of certain circumstances connected with his subject. I may remark, though familiar to you, that, until lately, Bichat's views of the nature and cause of asphyxia were considered the most probable and best established; hence they were those that were taught and admitted in our colleges and medical writings.

In a paper, "On the Cause and Effects of an Obstruction of the Blood in the Lungs," published in the 19th vol., 1823, of the *Edinburgh Med. and Surg. Journal*, I have given an account of a series of experiments which I had performed. From phenomena which were witnessed in those experiments, I deduce—"that the obstruction of the blood in the lungs, on suspension of respiration, is not the effect of a mechanical cause—that is, of collapse or subsidence of the lungs; that the obstruction of the blood in the lungs, on suspension of respiration, arises from a deprivation of pure atmospherical air." From these deductions, and the facts—that an animal can survive only a very limited time the suspension of the function of respiration; and that the blood undergoes a wonderful change, in consequence of its being acted upon by the inspired air; I infer, "that the blood cannot pass from the system of the pulmonary artery into that of the pulmonary veins, without first undergoing those unknown changes from the action of the inspired air."

In my paper I have noticed, that Harvey supposed the circulation in asphyxia to be arrested in the lungs; Goodwyn and Bichat in the heart: that Harvey attributed the vacuity of the aortic system after death to an obstruction of the blood in the lungs, in consequence of their collapse: that Goodwyn and Bichat concurred in imagining asphyxia to be immediately dependent upon the circulation of black blood, or blood of a venous character,—the left ventricle, according to Goodwyn, ceasing to act "from a defect of a stimulating quality in the blood itself;" the heart ceasing to act, according to Bichat, from the circulation of black blood (*sang noir*) in the coronary arteries, that fluid stopping (*empeche*) the action of its fibres. The error of these several views I have pointed out, and, in conclusion, I have advanced the theory, that the immediate cause of the cessation of the action of the heart, on suspension of respiration, arises from the obstruction to the circulation in the lungs, not from a state of collapse of those organs, as supposed by Harvey, but from a deprivation of pure atmospherical air. Further, I have cursorily examined how far the obstacle to the circulation of the blood, from a deficiency of pure atmospherical air, is adequate to explain the cause of some of the vital phenomena observed in health and disease.

My paper, as I have above stated, appeared in the 19th volume, 1823, of the *Edinburgh Medical and Surgical Journal*. In the 29th volume, 1828, of the same journal, Dr. Kay published an essay, entitled, "Physiological Experiments and Observations on the Cessation of the Contractility of the Heart and Muscles in the Asyphyxia of Warm-blooded Animals," in which he develops the same views with respect to the immediate cause of the cessation of the heart, as I had already done, by a similar or analogous series of experiments. In this essay, no reference is made to my paper, which had appeared in the same journal four years previously. This circumstance I mentioned to Dr. Kay. Dr. Kay, in 1831, published, "Further Experiments on Suspended Animation," in the *North of England Medical and Surgical Journal*; in that essay, in a marginal note, Dr. Kay says, that I had called his attention to my paper, and states my having anticipated him in one of his conclusions, namely, "That the obstruction of the blood in the lungs, on suspension of respiration, arises from a deprivation of pure atmospherical air." This marginal note is copied into Dr. Kay's recently published volume on the Physiology, &c. of Asphyxia. However, though Dr. Kay enters very elaborately into the history of asphyxia in this volume, yet no notice whatever is taken of my having questioned the correctness of Bichat's hypothesis, nor of my having advanced the theory,—that the immediate cause of the cessation of the action of the heart, or asphyxia, or suspension of respiration, is the effect of the circulation being obstructed in the lungs.

I regret that any circumstances should arise to render it imperative on me to make this communication. But, in consequence of the author of the article on "Asphyxia," in the *Cyclopædia of Medi-*

cine, and the reviewer of Dr. Kay's recent work, in the *Liverpool Medical Journal*, having given Dr. Kay exclusively the credit for being the first who pointed out the error of Bichat's hypothesis, and established, that the immediate cause of asphyxia is the obstruction to the circulation in the lungs, I deem it incumbent on me, in my own defence, to set the profession right on these points. I am, Sir,

Your very obedient servant,

DAVID WILLIAMS, M.D.

Liverpool, May 12th, 1834.

P.S. Should the subject of asphyxia be hereafter reviewed in your journal, I trust the reviewer will take the trouble of examining the papers alluded to, and thereby satisfy himself of the accuracy of this statement, and do justice accordingly.

PORTION OF FINGER, COMPLETELY SEPARATED FOR MORE THAN HALF AN HOUR, AND AFTERWARDS UNITED, THOUGH IN AN INCOMPLETE MANNER.

CASES of this kind are so rare, or are related on such doubtful authority, that many surgeons are still inclined to deny the possibility of reunion of a divided part, when any length of time has elapsed after its complete separation from the body. The following case occurred not long ago at one of the Parisian hospitals, and presents a remarkable example of the power which nature is capable of exercising on certain occasions in the reunion of divided parts. Its authenticity is beyond question. It is related by M. BEAU *interne* at the *Salpetrière*, Paris, in the *Archives Général* for March:—

On the 7th September, 1833, a quarter after six in the morning, Marianne Daune, aged 41 years, house-maid at Salpetrière, a girl of good strong constitution, and very sanguine temperament, while cutting bread for the patients, accidentally wounded the thumb of the left hand. The force of the cut was sufficient to divide the finger completely, and its extremity was projected several inches from the body, on the table. Another woman, who happened to be present, took up the divided morsel, and wrapped it in a piece of paper to keep for the interne, who did not arrive until half an hour afterwards.

On examination, M. Beau found a clean wound, embracing the whole thickness of the thumb, passing obliquely from the dorsal to the palmar surface, and commencing a little below the middle part of the nail which had been divided in a line parallel to its upper edge. At each pulsation of the heart a small jet of blood was discharged, to arrest which the hand was plunged in cold water. The separated end of the thumb was pale and cold, one fourth of an inch long on the dorsal surface, and three lines and a half on the opposite side. The divided edge was clearly cut, but covered by dust. M. Beau having conceived the idea of attempting reunion, moistened the morsel of flesh in warm water, removed the dust as carefully as possible, and having cleared the wound with a sponge, he placed the divided surfaces in perfect apposition; the parts were kept in contact with five slips of diachylon plaster, some lint and compresses. During the whole of the 7th, there was severe pulsating pain in the thumb, extending up to the shoulder, and preventing the patient from sleeping. 8th. Fever and thirst. 9th. Less fever. 10th. No pain; rested well all night. On the 15th the dressings were removed; the lint was dry, and it was found that the end of the finger was united slightly at the palmar surface to the thumb. On the dorsal surface the parts were still capable of some separation; the nail and epidermis were black; no trace of suppuration. The finger was now plunged for two or three minutes in warm wine, and dressed in the same manner as before.

18th. No bad odour or suppuration; the adhesions formed are stronger; there is a little dark serous fluid interposed between the edges of the nail.

20th. The nail and epidermis were removed by exercising gentle traction. The finger now presented the following appearance:—The summit of the phalanx, dorsal surface, is not united to the rest of the bone; it is necrosed, dark, and moveable, being merely retained *in situ* by the soft parts, which are in a state of gangrene. A gray adhesive eschar forms round, and below it a horse-shoe line, very narrow. The corresponding surface of the phalanx is exposed, and does not present any appearance of vascular granulations; but on the lateral and dorsal surfaces, the skin of the divided morsel is continuous on all points with the rest of skin; the bond of union is traced by a semicircular line, not well marked, though prominent. Here the skin is red and smooth, forming a crescent two lines and a half broad in the middle, and gradually dimi-

nishing on either side within half a line of the nail.

21st. Suppuration has commenced; the portion of necrosed bone was removed.

22nd. The eschar on the dorsal surface has come away. We established the existence of sensibility in the extremity of the united finger, by touching the palmar surface with the barb of a pen; even when the head was turned aside, the patient could tell whenever the feather was placed in contact with the skin.

27th. The cicatrization of the wound is complete.

[The following case, which we give from a translation made by the *Dublin Journal* for May, is related in the *Annal. Univ. di Med.* for September last.]

Re-union of the Extremity of a Finger which was completely cut off. By Dr. Angelo.—On the first of January, 1818, a day during which the cold was more intense than I ever felt it in our district (at Chiavari), Emmanuel Copello cut off at one blow, with a very sharp knife, the extremity of the index finger of the left hand. The division took place transversely below the root of the nail. The child immediately took up this portion of the phalanx which fell on the ground, re-applied it to the wounded finger, and hastened off to the shop of M. Podesto, an apothecary, about fifty paces distant from the place where the accident had just occurred, for the purpose of having it dressed. There he took off the detached portion of the finger to show the cut, and re-applied it immediately. At the end of about fifteen minutes I came to the shop. I examined the finger carefully, and observing that the child had not replaced the extremity of the phalanx so as to correspond exactly with the finger, I wished to remove it a third time; but whether the coagulable lymph made it already adhere, or, what is not very probable, whether this adhesion was the effect of coagulation of the blood, I found the approximation so solid, that I did not think it right again to detach the extremity of the finger by applying force: I dressed it, however, the best way I could, and finally, kept it in its place by means of two straps of diachylon, which I secured by two circular turns made with a third strap. The finger was covered with some linen soaked in balsam of Peru, and the whole enveloped in an appropriate bandage. I recommended the patient to keep his arm in a sling, and carefully to avoid striking his hand against anything. The fifth day I removed the dressing, and I saw that the skin of the extremity was livid. I now thought that mortification was proceeding, when, on raising the epidermis thus charged, I perceived beneath it the cutis red, and completely re-united. I encompassed the finger with lint, still leaving on the two straps, which crossed each other at the extremity of the finger. Three days after I removed the dressing entirely, and was satisfied the re-union was complete. The mortified skin came off like the extremity of the finger of a glove: beneath the divided part of the root of the nail we already saw the rudiments of a new nail. The sensibility of the extremity of this finger remained for a considerable time more obtuse than that of the other fingers, and its point was not as thin as before. In the point corresponding circularly to the division, the cicatrix left around the finger a depressed line, similar to what would exist if the end of the finger had been for a long time compressed in the narrow neck of a bottle.

DESTRUCTION OF THE

NECK OF THE UTERUS,

WITH COMPLETE ABSENCE OF THE OS UTERI.

VAGINAL CÆSAREAN OPERATION.*

COMPLETE obliteration of the os uteri at the moment of labour is very rarely witnessed by accoucheurs. We find, indeed, in writers, many examples of the kind; but in most of these cases the observer has been led into error by a vicious or elevated position of the neck, which sometimes exists to such an extent that, without very careful examination, an absence of the uterine orifice might be declared. In the present case, however, the fact of obliteration was established by several celebrated midwifery practitioners, and existed to a degree requiring the vaginal operation, which was performed with complete success.

Case.—On the 4th of December, 1833, Dr. Caffe was called upon by Madame Mauray, sage-femme, to see a lady who had arrived at her establishment the night before, and was at the full period of gestation. This lady, 39 years of age, and of a good constitution, was the mother of three children, all born by easy labours. Her last accouchement took place eight years ago, and gave rise to no accident whatever. The labour-pains had been present for thirty-six hours, without having produced any serous discharge; and the midwife was unable to discover the

* Related by Dr. Caffe, in the Journ. Hebdom. March 1834.

presence of the os uteri, or even the entrance of the organ.

On making an examination, M. Caffe recognised the following particulars: The vulvo-uterine diameter of the vagina measured five inches; its superior wall, excessively tumefied, formed a kind of hood which filled a part of the vaginal cavity; the latter was red, and not moistened by mucus; the apex of the vagina terminated suddenly, and might be compared to a cylinder closed above, without any trace of projecting body or uterine neck. Near the median raphe of the posterior wall, the finger touched a fold, about a line broad, giving the sensation of a small chord drawn tensely; but at the sides of this fold, or elsewhere, it was impossible to find the least trace of os uteri, either with the finger, or by guiding a probe-pointed stylet on the latter. During the violent expulsive efforts which took place from time to time, the pulp of the finger experienced the sense of motion communicated to it; but the uterus at the same time remained elevated, without projecting into the vagina.

MM. Hatin, Velpeau, Lenoir, and Larchet, were now called upon to examine the case, and all recognised a complete obliteration of the uterine orifice; an operation was therefore determined upon, and performed in the following manner.

The woman being placed on the edge of her bed, as in the operation for the stone, M. Caffe introduced, on the left index finger, a straight narrow-bladed bistoury, protected by a roll of linen within six lines of its point, and guarded by a ball of wax. Having arrived at the summit of the vagina, the direction of the bistoury was changed from the flat to the perpendicular position, its back being supported by the pulp of the index; and the anterior wall of the uterus was divided, layer by layer, the incisions being made from the rectum towards the bladder, and care being taken not to extend them beyond five lines upwards. When the incisions had been carried to about one quarter of an inch in depth, the operator arrived at the cavity of the uterus; a very dark, inodorous liquid, about four ounces in quantity, was immediately discharged.

The uterine contractions aided much the divisions made by the bistoury, and in order to avoid any danger of laceration, two lateral incisions were made with a probe-pointed bistoury, one on the right and the other to the left, extending a few lines only; at this moment a contraction of the uterus enlarged the crucial incision thus made and rendered it oval. After the lapse of an hour the labour was terminated, most fortunately, and without any laceration whatever. No foreign substance of any kind was introduced into the wound: the female was able to leave her bed on the sixth day, and on the ninth returned home.

After the cessation of the lochia M. Caffe took the precaution of introducing on several occasions, into the wound, a gum-elastic catheter, which was there retained for a few hours each time, in order to prevent its closure. This precaution was attended with the desired effect, for since the performance of the operation the menses have appeared twice, and been discharged without any obstacle. The cause of the obliteration in this case arose from the introduction of an irritating matter into the organ. M. Caffe was informed by the patient, that during the early months of her pregnancy she had frequently injected, with a gum-elastic tube, a solution of ashes into the vagina, and even into the uterus. Each time this manœuvre was performed, the woman was seized with intolerable pain, and the injections gave rise to a discharge of pus from the vagina, mixed with some pellicles. The woman did not complain of any pain during the operation, which was extremely simple, and followed by no accident or inflammatory symptoms; and the division of the uterine parietes did not give rise to the slightest hemorrhage.

SOME POINTS IN THE ANATOMY, PHYSIOLOGY, AND PATHOLOGY, OF THE

VERTEBRAL COLUMN.

The bulletin of the "Anatomical Society," in the *Archives Générales de Médecine* for March, contains a paper by M. Chassaignac, under the above title, which is worthy of notice, and of which the following is the substance:—

In this paper M. Chassaignac draws the attention of the "Anatomical Society" to the existence of certain osseous tubercles, situated at the base and behind the transverse processes of the lumbar vertebræ, on the same line with the articular processes, but a little below them. These little tubercles present the appearance of a mamellated process, especially in the two last dorsal vertebræ, and serve as points of attachment to the tendinous slips of the longissimus dorsi muscle, which has been erroneously described as attached to the articular processes.

The sixth cervical vertebra also presents another tubercle, which we find, but

in a less marked degree, in the other vertebræ of the neck. This tubercle is placed in front of the transverse process, and is the more prominent as the individual is advanced in age; it varies considerably, both in size and form, in some subjects being nothing but a simple osseous slip; in others forming a perfect hook, with the concavity turned forward. This process corresponds with the primary carotid artery, which is placed in front, and a little to the inner side of it, and furnishes so certain a guide to the vessel, that by placing a finger on the eminence, we may plunge a scalpel into the artery with the eyes shut, without any previous incision. In consequence of this connexion, M. Chassaignac has given it the name of *carotid tubercule*. The process can be easily felt through the integuments, at least in the dead body, being only covered by the skin, subcutaneous muscle, cervical fascia, and exterior edge of the sterno-cleido-mastoid muscle. To find it, we have merely to extend the neck slightly, and press the finger on the inner edge of the above-mentioned muscle, two inches above the clavicle; at the same time we should be careful that the neck is perfectly straight, for the least rotation is enough to alter the relations between the artery and tubercle. In the living body the process is not so easily discovered, in consequence of the greater resistance given by the subcutaneous and sterno-mastoid muscles.

In an anatomical point of view, the tubercle, of which we speak, serves to distinguish the sixth cervical vertebra from all the others, and to determine in a positive manner the situation of different organs in the cervical region. As applied to surgery, a knowledge of this process may serve to direct us with the greatest certainty to the primitive carotid, and in this respect is analogous to the osseous tubercle on the first rib, close to the edge of the subclavian artery. It also presents a surface well fitted as a point d'appui to compress the vessel in cases of sudden hemorrhage. In the case of a penetrating wound, with hemorrhage, inflicted in the neighbourhood of this process, the blood may come either from the primary carotid, from the inferior thyroid, from the vertebral artery, or from the posterior or ascending cervical branches. The relations of these different arteries with the process in question may serve to determine the precise source of the hemorrhage, a question otherwise extremely difficult to resolve. It is immediately below this process that the vertebral artery penetrates into the canal of the cervical vertebræ; the posterior cervical is below, and a little external to it; the inferior thyroid, crossing behind the carotid artery to gain the thyroid body, is also very close to it; the tubercle will, therefore, serve as a useful point *de depart* for the exploration of the surgeon when about to apply one or more ligatures. Should any difficulty be experienced in seeking this tubercle through the integument, it is immediately obviated by a division of the skin and superficial layer of tissue.

PRESERVATION OF SUBJECTS FOR DISSECTION.

TREATMENT OF DISSECTION WOUNDS.

To the Editor of THE LANCET.

SIR,—In your last number, you mentioned the strong antiseptic qualities of charcoal powder, and its consequent power in reproving the stench connected with dissection. As the warm weather has now commenced, and the scalpel will, I hope, be liberally used in the dissecting-rooms this summer, it may be of utility to state that I find nothing so effectual in preventing putrescency as injecting the veins* with a strong solution of nitre and common salt. If used warm, before arteries are injected with the wax and tallow, it preparatorily increases the temperature of the body. This is much better than scattering salt or any other antiseptic over the dissection, which must necessarily obscure, if not derange, the parts. The plan I have mentioned preserves the pearly whiteness of the tendons, and often improves the colour of muscles. I have seen the latter, after having been in the dissecting-room three or four weeks, when cut into, as red as christmas beef in the shambles. Another recommendation is, that should the dissector cut his finger, the stimulus of the salt seems to counteract the effects of the impregnating matter. Out of the numerous instances of my pupils who have cut themselves, I have not known a troublesome case, save one, where there was palpable neglect. My invariable advice to the student who cuts himself is, to wash the part for ten minutes with soap and warm water, then to suck the cut well for the same length of time, and, lastly, defend it completely by surrounding it with several turns of straps of adhesive plaster, so as to perfectly intercept the wounded finger from all adventitious matter, when the student may im-

* Mr. Brookes used to inject a solution of nitre alone into the arteries. This is not so well, because it obstructed the progress of the wax.

mediately renew, if he chooses, his dissection, again, with impunity. In every case where the above plan has been adopted, no sensible degree of local inflammation has succeeded, and no bad effects whatever have been produced.

In some neglected cases a great deal of pain is often produced by a collection of a very small quantity of matter under the aponeurosis of the finger, which, if not let out, will be probably succeeded by enlarged axillary glands and more extensive symptoms of irritation. I know the presence of matter has been denied by many, but my experience has proved that as soon as an exit was made for it, the intolerable pain has at once ceased. This was remarkably so in the troublesome case already alluded to. This pupil I took to a consulting surgeon of high repute, and proposed to him that an opening should be made, with which he did not coincide, alleging that no matter was present. In the night, however, the pain became so intolerable that I was induced to do it; a small quantity of matter escaped, and the patient was instantaneously and permanently relieved from pain.

Yours very obediently,

G. D. DERMOTT.

35, Dean-street, Soho.

PUBLIC EXPOSURE OF CHILDREN WITH THE SMALL-POX.

To the Editor of THE LANCET.

SIR,—I observe in the last number of your Journal, a letter from a correspondent signed *M. M.* on inoculation, wherein he confesses himself to be not well acquainted with the subject of medical jurisprudence, yet justly complains of a parish surgeon introducing the small-pox in the neighbourhood near where he resides. If you think that the information I here forward can serve his case, may I ask the favour of its insertion in your next number?

From the relation of the following cases, which are to be found in Maule and Selwyn's Reports, it is evident that inoculation under the circumstances he relates in his letter is unlawful. It is in their book said to be unlawful and injurious to carry a child infected with small-pox along a public highway in which persons are passing, and near to the habitations of the King's subjects, and it is an indictable offence, as the following cases evince. Some years ago two trials took place in the Court of King's Bench; one, of the mother of a child infected with the small-pox, and the wife of a journeyman coachmaker named Vantandillo, then residing in a court near Long-Acre, for exposing and taking the child in a diseased state of small-pox through the public streets to the house of the surgeon who inoculated it, by which the contagion infected most of the children in the court where she resided.

The second case emerged from the foregoing (if my recollection is correct). —— Burnett, a surgeon-apothecary, was tried and found guilty in the King's Bench, for unlawfully advising and allowing a child to be brought through the public streets in a state of disease to his residence. So it appears to be an indictable offence in an apothecary, after having inoculated children, unlawfully and injuriously to cause them to be exposed in the public streets to the danger of public health. The learned judge (Le Blanc), in passing sentence on the defendant in this case, observed that the introduction of vaccination did not render the practice of inoculating for the small-pox unlawful, but that at all times it was unlawful and an indictable offence to expose persons infected with contagious disorders liable to be communicated to the public, and injurious to the public health. The defendant was sentenced to six months imprisonment.

A case under similar circumstances was tried some terms subsequent to the above trials. Mr. Ridout, of Paternoster-row, was, in this instance, found guilty, but was not called up for judgment, on a promise to discontinue the practice.

I remain, Sir,

Yours, &c.,

W. WALFORD.

Church Row, Limehouse,
May 11, 1834.

To the Editor of THE LANCET.

SIR,—The surgeon referred to by *M. M.* is punishable by indictment, not for inoculating children with small-pox, but for ordering them to be *brought for inspection*. — The decision of Mr. Justice Bailey, the Royal Jennerian Society and London Vaccine Institution publish every year in their yearly report; I beg to inclose it.

Believe me yours, &c.,

JOHN EPPS, M.D.,
Director of the Royal Jennerian and London Vaccine Institution.

89, Great Russell Street,
May 13, 1834.

CLINICAL INSTRUCTION

IN LONDON AND PARIS.

To the Editor of THE LANCET.

SIR,—The present is an important, and I may say critical, moment with the medical profession in this country. Its foundations, *good or bad*, are tottering under a scrutinizing investigation, set up, doubtless, with the best wishes of its instigators, with a view to the improvement of a science the most necessary to the welfare of humanity. Attempts are making, by parties not altogether disinterested, to bias a Parliamentary Committee, whose labours we ought to hope will conduce to correct the real abuses of a profession they are intended to reform. I wish now, Sir, to draw your attention to a point which appears to me of no slight importance; I mean a due comparison of the advantages afforded by the mode of public medical instruction now adopted in the schools of England and France. It seems that a member of the Faculty, who not long since was examined before the Committee, and who, it appears from his evidence, has spent a great portion of his pupilage in the Parisian schools, has greatly extolled their superiority over our own. I too have studied in both; and I am firmly of opinion that the present regulations in this country are preferable to those on the continent, so far at least as regards the acquirement of *practical* information. In our hospitals the student is permitted to enter the wards of the sick at his pleasure, he has therefore all time allowed him to make his own reflections, and learn, not from the medical attendant only, but by actual observation, the true characters and the different stages of disease. He has also the opportunity to collect the opinions of the professors. Can he do this in France? It is true he can, should he be one of the few fortunate enough to be elected as *interne* (dresser) *at the Hotel Dieu*, or at any other hospital in Paris; but if not, what are his advantages? He can certainly attend the hospitals *gratis* every morning for about two hours, mingle with the crowd of his fellow pupils swarming around the professor, and perchance catch a glance of a few of the patients at the opportune moment, and thus be enabled to hear and understand the observations occasionally made by the professor, and finally be admitted to a clinical recapitulation, delivered when the patients are no longer under his eyes. This is the extent of his rights as a pupil in the medical schools of Paris. At any other hour in the day admittance is denied. Should symptoms of importance be expected to arise, as they so often do in the course of the twenty-four hours intervening between this and his next visit, he can only rely for an accurate description of them upon the judgment of the *interne*, who alone has witnessed them, and who imparts them to the students through the mouth of the professor. Should any urgent case be admitted during the above interval, its first and most important symptoms thus entirely escape his personal observation. The disadvantage of such a mode of proceeding I have experienced in common with most of those of my fellow-students who *studied* with me at these hospitals, and who were unanimous in their complaints upon the subject. I would ask those gentlemen who have been educated at our hospitals to draw a parallel between this method of practical instruction and that which they have been enabled to profit by, *if they chose*, in our institutions. Here, when clinical instruction is given to the pupil, every symptom which is alluded to, or described, may be examined and verified by him, whilst those observations are still fresh in his memory. Why then should the French schools be looked upon as patterns for their scientific advantages, and our own denied the merits they certainly possess in the eyes of all who wish to cultivate the science of their profession? There is, however, one point upon which, up to the present day, our continental neighbours have a just claim to superiority, and of course deserve imitation. I allude to the opportunities held out to the advancement of anatomical science, a branch of medical education of the highest importance for the improvement both of medicine and surgery. It is acknowledged on all sides, that much has already been gained with us in this respect; and could but the unhappy difference which exists between our anatomical professors, equally disgraceful to them as votaries of science, and as examples to the junior members of the profession, be brought to a close, well-grounded hopes might then be entertained that the anatomical department might vie in its advantages with the other important branches of medical tuition; leaving us little to desire on these points, and enabling us to compete with our neighbours, and even surpass them in the acquirement of true practical information.

I have now pointed out the conclusions which I have come to with regard to the respective advantages between English and French medical tuition; I should, however, add, that I do not wish to underrate the facilities afforded to *competition*

by the liberality of the French institutions. These, be it remembered, are wholly under the control of government, and consequently better calculated than *private* or *chartered* companies to place candidates of all ranks upon an equal footing, by requiring only moderate pecuniary resources. I will not intrude my remarks further on this subject, but subscribe myself Your obedient servant,

H. W. Rush.

*** The subjects which are opened for discussion in the above letter, are too various and important to be considered and determined in a brief notice. Mr. Rush is perfectly correct if he directs his remarks to the admission of students into the wards of *St. Thomas's*, *St. Bartholomew's*, and *Guy's* Hospitals; whereas if he makes his statement with reference to the *Middlesex*, the *London*, and *St. George's* Hospitals, he will find, on inquiry, that the students in the latter establishments enjoy no such advantage.

ST. PANCRAS SELF-SUPPORTING CHARITABLE AND PAROCHIAL DISPENSARY.

Principle and Object of the Institution.

1st. To place within the reach of the industrious artizan of small income the means of obtaining medical aid, without subjecting him to the necessity of seeking humiliating charity, or destroying his honest pride, by exposing him to the demoralizing influence of the Poor Laws.

2nd. To afford gratuitous relief to persons of real desert, who may be unable to procure by their own efforts the advantages above described.

The first-mentioned or *free class* of patients, may obtain for themselves surgical and medical attendance by assuring with the small sum of sixpence per month, which is not equal to the amount frequently wasted by them on nostrums and self-prescriptions. In virtue of this premium they may demand and obtain the most efficient professional assistance and medicines, and to their demands the number of surgeons ensures immediate attention; thus will be saved the time and labour often fruitlessly and always painfully bestowed on seeking the signature of a Governor of an honorary Dispensary; the unfortunate will be spared the bitter degradation of asking charity, for which will be substituted the honourable satisfaction of claiming assistance as a right, and obtaining it immediately.

The second object of this Institution will be attained by the aid of the charitable and humane, who are entreated to be discriminating in the bestowal of their kindness, and thus ensure the legitimate application of their bounty to persons whose destitution unhappily precludes them from the benefits which the industry and self-respect of the first class (the free members) procure for themselves.

As the sum which will entitle the donor to have a patient constantly under medical care, is only half the amount invariably demanded by honorary dispensaries, those who are anxious to give the most extensive effect to their humanity, will see the advantage of supporting this Institution. The means by which this superiority is obtained over honorary dispensaries are the following.

The surgeons constituting this Association will dispense their own prescriptions, thus saving the cost of keeping up a dispensary-house and appendages, and salary of dispensing apothecary, a charge equal to at least a third of the whole income of such institutions; in other words, of every guinea subscribed by the humane and excellent supporters of these charities, less than 14*s.* is appropriated to the literal benefit of the poor. This obvious advantage will enable the St. Pancras Self-Supporting Dispensary to allow subscribers of one guinea annually to have two patients constantly on the books, and subscribers of half-a-guinea, one. For proportionate increase of subscription, corresponding privileges are allowed.

TREASURER.

Rev. C. Perring, 61, Torrington-square.

SURGEONS.

Mr. Malim, 14, Regent-square.
Mr. Cumming, 28, Tavistock-place.
Mr. Robinson, Seymour-street.
Days of attendance—Monday & Thursday.
Mr. Fraser, 5, Clarendon-square, Somers-town.
Mr. Milbanke, Judd-street.
Mr. Cumming, 28, Tavistock-place.
Tuesday and Friday.

Mr. Rhodes, 54, Judd-street.
Mr. Winter, Tavistock-place.
Mr. Walford, 39, Speldhurst-street.
Wednesday and Saturday.

Application to be made to any of the surgeons of the day from ten till twelve o'clock. The surgeon to whom application is made will continue to attend to the

case till its termination.—N.B. Any of the surgeons may be consulted till eleven o'clock on Sunday.

Extracts from the Laws and Regulations.

18. Surgeons shall prescribe and furnish medicines at their own houses unless the patient be too ill to go out, he shall then be visited by his surgeon at his (the patient's) own house.

19. The free members shall consist of working men, their wives, and children, and of any other persons who may be unable to provide themselves with medical aid and drugs in the usual manner; the terms of subscription to be 6*d.* per month for each member above twelve years of age, and 3*d.* per month for each member under that age.

20. Persons wishing to become free members, must send, or have sent for them, their names, age, and places of abode, to any two members of the Association, who shall immediately present the same to the treasurer, and report it to the next committee meeting: any one of the surgeons failing to do this shall be fined 5*s.*, to go into the general fund.

21. No free member shall be entitled to relief unless all arrears be paid up; every free member in arrear one month shall be fined 1*d.*, if two months 2*d.*, if three months 3*d.*, and if a longer period, shall forfeit all benefit derivable from the Association. Each member shall, at the time of his entering as a free member, sign a paper agreeing to this law.

22. Poor married women, *who are free members*, may be attended in their confinement by any one of the surgeons they may please to select, on paying ten shillings as a fee, with the treasurer, two months previous to their confinement.

23. The ten shillings so deposited to be paid by the treasurer to the surgeon who has attended the case, at the next quarterly general meeting succeeding the attendance.

24. All free members shall belong to the Institution for at least four months before they shall be entitled to the benefits thereof, but any person may become a free member by paying four months' subscription in advance, unless they apply for admission during sickness, then they shall pay twelve months' subscription in advance.

THE BAKERS AND BREWERS of the metropolis, influenced by benevolent example, are about to try on some dispensary patients, how far poison may be used in food, without destroying life. The consumers will have the trial of bread and beer gratis, the donors being remunerated by the experience gained.

DUBLIN COLLEGE OF SURGEONS.

(*From a private Correspondent.*)

THERE are instances recorded of persons of acute perception and great learning having mistaken a valet for his master, and made their most profound bow to the lacquey in the ante-chamber. Such an anecdote is related of the celebrated Oliver Goldsmith. Nor are we inclined to doubt the truth of the story when we reflect that a mistake of a still more extravagant character is in constant commission among a numerous portion of his countrymen in the Irish College of Surgeons, which has for years merged its identity in its own functionaries. We know indeed several members of that body who look on Mr. COLLES and his colleagues as the College of Surgeons itself; and who consider its premises in Stephen's Green as a sort of official appanage to the private dwellings of these individuals. And why should not the public and the members of that institution fall into this natural error? For if we only analyse the misconception, we shall find it to be perfectly reasonable. During many years Mr. COLLES and his colleagues, for example, have in every particular personated the College of Surgeons, and of course relieved its members from the trouble and obligation of discharging their duties. They alone were the ostensible representatives of the body, upon whom the public eye was fixed. They appointed the professors, the demonstrators, the conservators, the porters, and the resurrection-men. Messrs. HOUSTON and DIXON had each the honour of being the creation of their hands. They took into, and kept out of, the Courts of Examiners and Appeal, and the Committees of the College, whom they pleased, by a dexterous use of the ballot-box: they made PALMER an examiner, and *unmade* Mr. JACOB, by the use of this happy machine. In the same manner they have voted away salaries, compensations, bounties, and travelling expenses, to their scientific tourists, just as if the money was really their own. We do not recollect the exact sums bestowed on Mr. HOUSTON for pleasant excursions of this kind; but we know

pretty well how little he has done for what he got, and that they have sent Mr. HARRISON to London at the moderate expense of three guineas a day to protect *their interests* from the ruthless clutch of reform.

Now, when persons see all these things done by Mr. COLLES and his associates why should they not, in meeting these personages, respectfully salute them as the College itself, and venerate the granite pile in Stephen's Green, as the shrine of their dignity and authority? In fact, we see, so far, no earthly reason why the profession and the public should not consider them to be legally, as they are virtually, the College itself; or that the members of that body, so long deprived of their rights, and seeing them so long exercised by others, should forget their own identity and corporate capacities, and recognise them only in those persons to whom they have been so easily resigned. Should any person therefore be inclined to indulge in a smile at the mistake committed by the College, we beg of him, by way of extenuation, to reflect that it would be quite out of character with the spirit of the institution to do its own business. Did not Mr. COLLES, Mr. CUSACK, and all the other great surgical authorities, tell the members of the body one thousand times that it would be unworthy of them to keep shops; to take fees which people could pay them; in short, that they ought to be gentlemen and *earn* their bread without *working* for it? What less, then, could the College do than to set about forming themselves into an aristocratic club; providing themselves with a ballot-box; and making a little aristocracy in the heart of their own state? The ballot-box was accordingly plied; the members were made; the *imperium in imperio* was established; but was it a thing to be heard of —to be borne—that these "honourable men" should look after their own affairs; or that, if taking any part in the concerns of the institution, it would not be in conformity with Messrs. COLLES and Co.'s advice, and in the true spirit of living without labour? Impossible.

Another wheel in the engine of state was necessary to rid them of all trouble in the management of their affairs; and this they found in the addition of a school to the establishment. The presence of professors in the machinery of the institution achieved for them two great objects, —of defending them on all occasions from the insolent aggression of the discontented, and of disposing of the funds, and exercising the functions, of the body, without pain or labour. The professors, who of course are all talkers by profession, and placemen in practice, acted as a sort of Janizary corps or body-guard to the College, until at length there was no college for them to guard, and the men who were once members of it really mistook their own servants for themselves, and paid them, as we have said, that homage which was due to themselves alone. Paradoxical therefore as the statement may appear, there is really no College of Surgeons in Ireland at present, except that which is concentrated in Mr. COLLES and his colleagues;—in one word, the ballot-box has put the College aside and put the School of Surgery in its place. Now as we would be simple enough to prefer a middling College of Surgeons to a bad school of professors, it may be worth while pointing out to those who are at present engaged in inquiries of this kind how the members could again recover what they have lost.

It is, we assume, from what has been advanced, a necessary step towards the accomplishment of these objects to put an end to the ballot-box and to member-making. Its natural tendency is to keep the members as few as possible, that they may be the more convenient instruments of corruption. In this way it has been as efficient and manageable an engine of spoliation in Dublin as has been the "irresponsible" College in London. Of the two, indeed, it has been the worse form of despotism, because it has more the appearance of a fair or equitable ordonnance. Besides the long train of positive evils which it produces, it makes distinctions in medical bodies which are unwarranted by the circumstances of the case, and of the persons whom it so injuriously affects. Unlike the general mass of society where ignorance is made a pretext for depriving men of the rights and advantages of self-government, a society of medical men is

composed of persons whose intelligence and acquirements completely exempt them from any imputation of this kind. In the eye of the law they all rank alike; and having submitted to the required test of examination, and withstood its scrutiny, why put their fate a second time in jeopardy by the ballot-box? We would suggest to the parliamentary committee the expediency of inquiring particularly into the agency of the ballot-box. Mr. CUSACK may be selected as a person from whom much *useful* information on this subject might be attained. There is no individual, indeed, who knows so well as he does "how many beans make five," particularly if black ones be required on the occasion: he is a perfect connoisseur in the use and application of the "Leguminosæ," upon which we understand he gives occasional lectures. A few of his pupils might, we think, also be examined on the subject, with every prospect of obtaining some useful hints. It might also be made a legitimate object of inquiry how far the school has been instrumental in superseding the College, and in what its proper relation to the parent institution consists. An historical inquiry into its origin and operation would probably demonstrate that the intention of its founders has not been adhered to by their successors very strictly; and that, considering what it has been converted into, it has been both an inefficient and expensive perversion of that which it was intended to make it at its foundation. Instead of supporting itself, it draws every shilling of its expenditure out of the coffers of the College. The theatres, scientific apparatus, and servants who attend all and every one of the professors, all do so at the expense of the College! The College, however, *would* have a school, and has paid handsomely for the gratification of its ambition. But supposing the professors ought to be provided with porters, theatres, and apparatus, is the school which they, in the aggregate, compose, such an one as is worthy of the present state of medical science, and of such a body as a college of surgeons? This is a subject which requires more consideration than we can just at present bestow on it; but we may remark, that if there is to be a school, it ought to be one for the tuition of the higher branches of medical science, and not a medical grammar-school for teaching the rudiments of the science, as is now the case. It ought to be rather a school where the more advanced students and the members themselves would complete their medical education. Let the medical committee make the experiment, and they will find on examination that four or five of the highest professors in the establishment, so far from teaching the sciences they profess, according to the improvements made of late in these sciences, do not know even the nomenclature introduced into those branches of science, nor the authors by whom the improvements have been made. In short, these professors are not unlike their brethren of Maynooth, who professed to teach mathematics and theology; but, as it turned out on their examination before a parliamentary commission, never read either Euclid or the Bible! It will therefore be a matter of necessary investigation with the committee to ascertain the kind of school best suited to the college; to discover how far the present one has been serviceable or injurious to its interests; to determine if the present teachers are qualified for the offices which they hold; to discuss the reasonableness of separating the College from the school altogether; and, above all things, to inquire into the *cash accounts* between those two bodies. Upon all these and various other topics of equal moment we shall refresh the memory of the committee from time to time, trusting that by thus doing our duty, and reminding them of doing theirs, we may be instrumental in retrieving the members from the ridicule of mistaking Mr. COLLES and his colleagues for the College, and of reducing these latter gentlemen from a corporate to an individual capacity.

ANTICIPATION.—"What a plague that registration of students is!" said Sayer to an examiner at the Apothecaries' Hall, the other day. "Never mind," said the examiner, "it wo'nt trouble you long; the end is at hand."

THE LANCET.

London, Saturday, May 24, 1834.

If the "fourteen" hospital surgeons, who form two-thirds of the members of the Council of the College of Surgeons, had been endowed with only a moderate share of common sense, they would scarcely have alleged that "the occupation "of teaching, and the power of examining "and conferring degrees, ought to be ex- "ercised, *as they now are*, by distinct in- "stitutions." The misrepresentation made by the words "as they now are" is so offensive, that the Privy Council must have regarded it as a positive insult. Did the writers of the petition apprehend that such a scandalously false statement would pass unnoticed? Did they believe that the members of the Privy Council were ignorant that the fourteen petitioners held a plurality of offices?—that nine of them assisted in forming a Court of Examiners, which counted only ten members; and that that Court is the only authority empowered by the charter to grant diplomas or degrees in surgery in London?

The "distinct institutions" for teaching and conferring degrees,—the "distinct institutions" which constitute portions of the present arrangements, and which it is prayed by the "fourteen" may not be disturbed,—are formed thus:—In the hospitals the surgeons pocket the fees by undertaking to instruct the students in the principles and practice of their profession. These excellent officers thus having secured one portion of their income, then proceed to Lincoln's Inn Fields, to fix a secure grasp on the other. The students having paid for the "opportunity" of witnessing the practice of the hospital, and having received a document, duly signed by the surgeons, testifying that they have observed the treatment of the sick with "unremitting zeal," present that testimonial at the Hall in Lincoln's Inn Fields, to the identical men who subscribed it at the hospitals. The "certificate" is an acknowledgment of the candidate's ability to pay; and, after the exchange of a few words, he hands over to the officers of the hospital, who are now acting in the capacity of examiners, another sum of money, amounting to between twenty and thirty pounds. Yet, because the whole of the money is not extorted in one place—because the humbug is divided into two parts, and is made to occupy more than one scene,—this system of giving instruction, of writing "certificates," and of selling diplomas, is represented as constituting the labours of "distinct institutions!"

But enough on this point, since the parties who, it may be supposed, are best acquainted with the iniquity of the proceeding, have declared against it, and confessed "that the union in one and the "same institution, of teaching and confer- "ring degrees, must be attended with dan- "ger to the public welfare, on the nume- "rous occasions in which the interest of "the teacher and the duty of the examiner "would interfere with each other." After such an acknowledgment, it is literally impossible that the hospital surgeons of the metropolis can be permitted to occupy a majority of seats in the Court of Examiners in the College of Surgeons. They have themselves declared against the propriety of assimilating the functions of teacher and examiner; they have made a confession of their guilty occupations; and Parliament, profiting by the admission of not-inexperienced culprits, will provide, in reconstructing the medical constitution of this country, an insurmountable barrier against permitting such a pernicious violation of the rights of individuals, and such a wanton attack on all the independent cultivators of medical science.

From what has just been stated, and from what has been written in the last two numbers of this Journal, it appears that the proprietors of the *University of London*, having petitioned the King to grant to the Professors, in conjunction with assessors or other parties whom his Majesty might appoint, the privilege of conferring degrees in medicine, arts, and law, *counter*-petitions were afterwards presented,—one from persons who professed to act as the College of Surgeons of London; a second, from three individuals who announced that they acted as "deputies" appointed by the physicians, surgeons, and lecturers; and a third, signed by the physicians, surgeons, and lecturers themselves.

Thus we have three counter-petitions, purporting to emanate from three distinct bodies of individuals, though, as a cloak to disguise a portion of the deception which has been practised, one of the petitions is denominated a "Memorial." Still, however, no attempt at cajolery can conceal the fact, that ONE of the three petitions, memorials, CONFESSIONS, or whatever the parties may please to denominate them, contains the whole of the names which are appended to the THREE, and thus, virtually, it was *one* opposition, which proceeded from *one* body of individuals, although, for the sake of display, the hostility was made to show itself in *three* documents. In a word, the petition from the hospital and other schools contained the names of a majority of the Council of the College of Surgeons, and the three names of the memorializing "DEPUTIES." Nor does the system of duplicity terminate even at this point, for it cannot be denied that many of the names of the physicians which are to be found in the petition of the medical officers and lecturers of London, have appeared in another petition against the University, which issued from the portals of the College of Physicians.

That the petition of the proprietors of the University should meet with opposition was perfectly just and constitutional. It was impolitic and indecent in those gentlemen to urge the council and senate to pray for a charter which should confer on the authorities of the London University the privilege of conferring degrees in medicine, at a time when they must have known that it was the benevolent intention of the Legislature to render harmless, if not annihilate, nearly the whole of the degree manufactories of the empire.

The parties, then, who oppose the prayer of the University might have acted on perfectly just and unexceptionable grounds, but it does appear to us that they have travelled beyond the boundary of propriety, and have fallen into the very error which they have so severely condemned in others. The petition of the University prayed that the institution might receive a charter which should confer on certain parties acting for the University and the Crown, the power of conferring medical degrees. "This," exclaim the counter-petitioners, "would be an act of injustice "towards us. *We*, also, are teachers. "Why give to one school a privilege "which is withheld from the others?" But the counter-petitioners did not terminate their hostility at this point. They had a view beyond that of opposing the charter, and actually prayed for "the es-"tablishment of a metropolitan Univer-"sity, framed in accordance with the "liberal spirit of the age."

"If (said they) this idea should be found worthy of adoption, and it should be deemed expedient that degrees be conferred in London, we take the liberty of suggesting that all the advantages of such a plan would be secured, by vesting the required power in some independent body not concerned in teaching; so that all those who have been educated in any of the efficient schools should be admissible to examination for such degrees, on the principle of perfect equality."

In this sentence the words "efficient

schools" indicate the direction in which the thoughts of the writers were flowing, but let the reader observe the following:—

"In this manner a medical university might be established in London, to which the several schools, and among the rest the London University, would stand in the relation of so many *colleges*."

Most sagacious "DEPUTIES!" Most generous haters of monopoly! This is your scheme of medical reform, is it? The document, in which this recommendation exists, was signed by GEORGE TUTHILL, GEORGE WATSON, and WILLIAM LAWRENCE, the three "deputies." By this triumvirate it was concocted and presented to the Privy Council. By the medical officers of the hospitals, and by the medical lecturers, with the exceptions stated in the note of Dr. EPPS, publisher' this week, it was unhesitatingly *sanctioned*. If, then, it were possible that a Government could act so unwisely as to institute such an university as this,—making the medical schools of London stand in the relation of so many *colleges* to that university, what, we ask, is to become of the medical schools in the great county towns? The "efficient schools," it seems, are all in *London*!—are entitled to be made "colleges!"—while the medical schools of Bristol, Leeds, Birmingham, Manchester, Liverpool, and other places, are to be kicked beyond the line which marks the boundary between "efficient" and "inefficient" establishments,—between the "recognised" and "non-recognised" academic institutions.

Really these "deputies" may be considered as the disinterested advocates of a just system of medical legislation.

There is another circumstance characterizing these proceedings, which we cannot pass over without remark. In a memorial, to which the name of WILLIAM LAWRENCE is appended, it is alleged not only that the University is without a hospital, but that the hospital which has just been erected at the University, if completed according to its present scale, would be totally insufficient for the accomplishment of its ostensible object. This *small* hospital will accommodate upwards of two hundred patients,—more than double the number which could be received into the *Westminster Hospital*, one of the "recognised" institutions.

There are men, it would appear, who believe that the members of the medical profession are incapable of discovering the difference between truth and falsehood, or observe with feelings of indifference the blackest species of tergiversation. This condemnation of a "*small* hospital," capable of containing upwards of two hundred patients, comes with ludicrous inconsistency from the lips and pen of WILLIAM LAWRENCE, a man who, had he adopted as his motto "sed sine labe decus," might have acquired and retained the esteem and respect of thousands of his professional brethren. We here antagonize with feelings of deep regret Mr. LAWRENCE's former and present opinions with regard to the advantages and disadvantages of small and large hospitals:—

Mr. Lawrence on "Small Hospitals," in 1826

"In requiring that candidates for the diploma should attend an hospital containing *one hundred patients*, the College has introduced a curious criterion. You will probably think it more important to know the description of cases, and the degree of knowledge and skill displayed in treating them. The name of SCARPA must be familiar to the framers of this rule. He has rendered great services to our science, al-

Mr. Lawrence on "Small Hospitals," in 1834.

"The medical school of the University is superior to the existing schools in no respect; while it is far inferior to them in not possessing a hospital, and thus wanting altogether the means of affording that practical instruction without which medicine and surgery cannot be learned, we

though he never enjoyed the *grand advantage* of attending winter lectures on anatomy and surgery by *a London Hospital surgeon!* The hospital which has enabled him to render these important services to our science, contains, I believe, *about twenty beds*. RICHTER, the contemporary of HALLER, in the University of Gottingen, *celebrated throughout Europe* for his judgment and practical skill, as well as for the clearness and good sense of his writings, had an hospital of *fifteen beds*." The same institution, now under the care of Professor LANGENBECK, an *accomplished anatomist and very dexterous operator*, does not contain more than *twenty-five beds*. The medical clinic in the general hospital at Vienna consisted of two wards, each containing twelve beds; and that of *the illustrious* J. P. FRANK, at Pavia, did not contain more than *twenty*. The surgical clinic at Vienna consists of *fourteen beds*, and that for diseases of the eye, of *twenty-four*. Thus, gentlemen, the great men whom I have referred to, consider it most conducive to the advantage of the student to limit his attention to a few cases, making each of these *a study*."—*Speeches*, p. 36.

"The number of persons to whom instruction can be imparted at the bedside of the patient, is circumscribed within narrow limits. Only a small number are able to see the patient and hear the surgeon."—*Speeches*, p. 25.

are, indeed, aware that a *small* hospital has been begun, and that great, though hitherto unsuccessful, efforts have been made to open it for the reception of patients; but we submit, that while it is thus tacitly admitted that medicine cannot be taught without the means of clinical instruction, the building, *completed according to its present scale, would be totally insufficient for the accomplishment of its ostensible object*."

We cannot consent to diminish, by adding one word of commentary, the deed impression which such disgraceful contradictions are calculated to stamp upon the minds of honest men.

In THE LANCET of this week will be found a prospectus of what was at first denominated a "Medical Association," but which is now changed into the new-fangled and erroneous title of "Self-supporting Charitable and Parochial Dispensary." In this Association the surgeons undertake to attend the parties mentioned in the by-laws in their own surgeries, and at the houses of the patients, under an "assurance" of *sixpence a month* for adults, and *three-pence a month* for children under twelve years of age. Thus, the mean payment may be stated at less than *four-pence halfpenny*, as the greater prevalence of sickness among the children of necessitous individuals, will bring as many "assurances" for persons under twelve years of age, as for parties who may have advanced beyond that period of life.

We really are at a loss to understand, even under this "*improved arrangement*," as it is called, how this "great emendation" of the very objectionable Southam scheme, can be productive of the least possible advantage to the medical practitioners whom, we are told, it is designed that it should greatly benefit. If *all* the members of the families of the mechanics in the district in which these medical officers reside were to be made to subscribe the stipulated sum, would the officers, even in that case, acquire an adequate remunera-

tion for their services? But what are they to expect under the operation of the plan we are now considering? It is proposed that a man shall entitle himself to the immediate attendance of the medical practitioner by the payment of twelve months in advance. In other words, if an individual, an adult, be attacked by ever so severe a malady, he may instantly secure *medicines* and *attendance* from *a well-educated surgeon*, for the term of ONE YEAR! And if the malady happen to a child, the parent may purchase the skill and physic of a competent surgeon, during twelve months, for a payment of *three shillings*!

And this is a scheme for BENEFITING THE MEDICAL PRACTITIONERS OF THE METROPOLIS!

The *charity* portion of this "self-supporting" machine is still worse, as there is, literally, an *underbidding* for patients,—at half the usual price. A voluntary subscription of one guinea annually is to procure for the subscriber the right of having two patients always on the books. If medical practitioners can be *adequately* remunerated on such terms, and under such circumstances as are here specified, what opinion must the public form of medical men, when *just* charges, and only just charges, are made for medicines and attendance, or for attendance without specifying medicines?

We really tremble for the consequences which the nick-named "Self-supporting" institution has produced; and we entreat medical practitioners to pause before they lend the sanction of their names to a measure of such an ominous character and tendency. The surgeons of this new Association, we are most willing to admit, are gentlemen of high character and undoubted respectability; but we are quite satisfied that the remedy they have provided for relieving themselves from the pain and inconvenience arising out of the defective state of medical policy, will, in the end, lead to an aggravation—certainly not to a mitigation—of the abuses which they so justly condemn.

WE have received from a great variety of establishments very elaborate accounts of the distribution of prizes to the students belonging to the schools of medicine in this metropolis. If we decline to insert those accounts, it is not because we actually impugn the integrity of the lecturers, or the qualifications of the medalists, but because we are thoroughly opposed to the principle on which the system of prize-adjudication is founded. Of course we refer to the examination of the students by *their own teachers*, to the conducting of the *examinations* in *private*, and to the teacher erecting *himself* into the office of judge of the qualifications of his own pupils. It is no answer to these objections to allege that the replies to the questions are returned in sealed papers, with characteristic mottos. The system is radically bad, and cannot be rendered even tolerable by one or two technical arrangements which, considered by themselves, may be regarded as free from objection. Until, therefore, the plan of awarding the prizes is changed, we cannot allow accounts of such proceedings to be published in the pages of this journal. It must always be remembered that whatever competition takes place under the present arrangements in awarding prizes, is limited to the pupils of each class, and that as the examinations are conducted in private, the successful competitor for a gold medal may obtain the prize by giving not more than half-a-dozen correct answers to fifty questions. The winner obtains the prize, not because he has displayed an extensive acquaintance with the subject on which he has been examined,

but merely because he has proved that he was better acquainted with it than his associates. In some instances the entire class does not amount to more than eight or ten individuals; and out of that small number it frequently happens that not more than two individuals volunteer to engage in the intellectual contest. Again, it may happen that the best-informed individuals are not the most anxious to enter the field. If the examinations were made to extend to the entire class,—if it were conducted in public,—if the scrutators were free from every inducement to bias,—and if the prizes were awarded, not because certain individuals had made a more efficient display of their acquirements than their companions, but because they had proved that they were thoroughly acquainted with the subjects on which their minds had been tested,—under these circumstances, how distinguished would be the honour of obtaining a prize medal! As the plan, however, of awarding honours is at present conducted, in many of the schools, it is little else than a system of quackery and puffing.

Although we presume the subject is well known and understood in all its points, we insert the communications contained at page 320 of our present number, in order to point out to any medical men who may chance to be ignorant of the law relating to inoculation, what are the penalties to which they are liable if they cause persons affected with small-pox to be exposed in the streets. As we have already stated, there is no penalty for inoculating for small-pox. The statement lately submitted to us by our correspondent "M. M.", and inserted at page 248, did not imply that the surgeon alluded to had himself caused the exposure of the inoculated children. Although his connivance in the whole proceeding was highly culpable, the parties who made themselves legally responsible may have been the contracting parish officers. The question of our correspondent was somewhat indefinite, and his letter did not afford us sufficient authority for inferring who, in the eye of the law, were the culprits on the occasion.

PRIZES IN CHEMISTRY AT THE LONDON UNIVERSITY.

To the Editor of The Lancet.

Sir,—I beg to inform you of the dissatisfaction of the students belonging to the class of chemistry in this University, regarding the giving away the medals in that class. The first examination took place in the middle of last week. On Monday last the mottos of the seven students who stood highest were fixed up in the cloisters, with a notice attached, stating that they were to undergo a second examination on Tuesday, at two o'clock. One of the gentlemen did not think proper to be present, yet the first silver medal has been awarded to him. The professor at the distribution said that ill health forced him to go into the country. —A friend of his had said that he was *obliged* to go into the country, but he was in the University the day before, if not the same morning, and he could not plead ignorance, for on the first examination the professor gave out that there would be a second. — The second examination was purely practical, and it is said that about practical chemistry this gentleman knew little or nothing. At the first examination one of the questions was, "How is the presence of iodide of potassium ascertained?" &c. when he asked the professor if he was to state the tests for iodine and potassium *separately* (in testing for sulphuric acid he might as well have asked if he was to state the tests for sulphur and oxygen separately), surely this did not argue the presence of much practical knowledge; or if he did it to mislead others, and make them believe he should stand very low, it was not worthy of a gentleman. If this gentleman stood so high above the others in the first examination, he ought to have had the gold medal at once. If not, he ought to have been placed below the other six. Trusting

that you will insert this in your next number, I remain yours, &c.

A Medical Student.

London University, May 17th.

[We have received other letters on this subject. One of them, signed "*M.*", contains the following statement] :—

The gentleman who obtained the gold medal was a private pupil of the Doctor's, a young man who is undergoing a "preliminary course of education for the medical profession," as the Doctor said at the distribution, whilst eulogizing the private pupil in rapturous phrases. Think you not, Mr. Editor, that the gentleman who obtained the first silver ought to have had the gold one, or none at all, but the last certificate of the seven. Perhaps the learned professor might have overlooked the merits of the silver medalist (though far be it from us to think or hint such a thing), for the benefit of the gentleman who has had the gold. This young man had simply and foolishly (for the Doctor's reputation) said that "he depended on the second examination for the gold medal." I must not forget to say that the Doctor said "most probably a second examination would take place," during the first examination. A second did take place, for the greater part of an analytical kind. "Practice makes perfect." So the event proved. The gold medalist knew every drug from constant sight and use. I do not wish for a moment to say or think that the first silver medalist was at all inferior to any one, but I do think that he ought not to have had what he has.

HOPITAL DES ENFANS MALADES, PARIS.

TYPHOID FEVER, WITH CEREBRAL SYMPTOMS.—DEATH.—AUTOPSY.

Haquille, a boy 9 years of age, was received into the hospital on the 8th of September last. He has been affected by the measles and hooping-cough, and has generally enjoyed good health. The present attack dates five days back. On Thursday evening last, on returning home, he was seized with great headach, lassitude, accompanied by some fever, and thirst; the abdomen was also painful; his sleep was not, however, disturbed that night, and next morning a violent epistaxis came on, and a good deal of pus was discharged from the ear; he had also some diarrhœa, which did not last longer than a few days. The patient now complains of pain in the belly and head, about the forehead and epigastric region: the abdomen is not tense or tympanitic; the face is pale, the tongue dry and not foul: he has passed no stool since he came into the hospital: the temperature of the skin, which is dry, is somewhat elevated, and the pulse beats 108. No delirium or agitation at night. The countenance has a fixed frowning expression, and the child does not answer readily the questions addressed to him. On applying the ear to the chest, we hear some little râle muqueux behind. *Lav. em. Emollient; Cataplasm to abdomen.*

10. The fever continues; the tongue is not foul, rather red about the edges; the skin is warm; pulse 104. The patient has been agitated during the night, and had a little delirium. The abdomen is not now tender on pressure, nor does he complain of his head: no cough: the boy lies in a stupid state, and wo'n't answer when spoken to. *Infusion of Mallows; Sinapisms to the feet; Lav. Emol.; Cataplasms.*

11. Evening. The lavement has brought away three stools; the abdomen is free from pain, and also the head. There was some delirium during the night, and in the morning the patient was considerably depressed, but he now seems a little better and stronger: he is not so stupid as yesterday, and answers better. The tongue remains clean, still rather red; the skin is hot; pulse 110. *Gum-solution; Sinapisms to the feet; Lav. Emol.; Catep.*

12. Nearly in the same state as yesterday; the same delirium at night, but now speaks distinctly and clearly; no pain of head or abdomen; face is not flushed or eyes injected; the tongue quite clean; passed one stool after the lavement was administered; the patient now coughs slightly; the pulse 112; skin not very hot. *Gum-solution; Lav. Emol.; Sinapisms to feet.*

13. This evening the skin is excessively warm, and the face exhibits a slight blush; the tongue is clear, moist, and red, but the lips are covered with a thin dark crust; was free from delirium last night and during the day; no pain of abdomen or head; passed one stool; the child now speaks readily when questioned; the pulse has risen to 124, quick, and rather hard. *Gum-solution; Lav. Emol.*

14. To-day the pulse is much quicker, 132, and developed, but the skin has, on the contrary, lost its excessive warmth; tongue clean; has passed two stools; face not flushed, nor any complaint of the head; no delirium. *Gum-solution; Small Bleeding of six ozs.; Cataplasm to abdom.; Sinapisms to feet.*

15. Same state; the bleeding has not had any influence on the pulse. *Cold*

Affusion on the head, to be administered in a bath of 25°.

16. Evening. Four o'clock.—There is now a good deal of fever, though the child has just come out of the bath; he is depressed; the face is pale and the countenance sunk; the tongue is red at the edges and crusted in centre with a brownish layer; lips covered with a very dark crust; he has a good dead of delirium during the day; pulse small, 140; respiration quite tranquil. *Emulsion of Gum, four ozs.; Cold Affusion as before.*

17. Evening. The fever continues unabated; the skin is very hot, and the pulse small, contracted, 140. The face is haggard, expressive of great pain and suffering. The patient is now delirious, and seems a good deal weaker than yesterday; the tongue red and clean, but the same dark-brown crust on the lips; one stool; he is now affected with a short dry cough. *Emulsion of Gum, four ozs.; Cold Lotion to head in case of delirium.*

18. The delirium was somewhat abated last night; the child appears more stupid, but when spoken to loudly he answers; tongue dry and clean; passed one liquid stool; the skin is not so hot as yesterday; pulse 120; no pain in abdomen or head. *Gum-solution; Lavem. Emol.; Cold Lotion to head.*

20. The face is now perfectly pale; the child lies in a state of insensibility; the eyes are insensible, and turned upward in the orbits, the pupils being strongly contracted; the skin is dry, with very little heat; pulse 118; tongue dry, not foul; the patient is unable to put it out; respiration slow, rather convulsive; there was no delirium at night; the abdomen is now tender, and somewhat tympanitic; coughs very little. *Gum-solution; Half Lavem., with Decoction of Bark.*

21. The lavement was retained for a short time, and then returned; the surface of the body is quite cool, rather cold; pulse 120; the abdomen is more tympanitic than yesterday; the iris of each eye is now excessively dilated, and there is no power of sight; respiration slow, but irregular. *Contin. remedies.*

22. The child lies in the same state of insensibility as to the mental faculties, but seems much more sensible and restless when touched; the skin is now warm; the extremities, which were yesterday quite cold, have now recovered some heat; tongue and lips clean; pulse extremely quick, feeble, 140; the child gives signs of uneasiness when the abdomen is pressed, and evinces excessive sensibility when the face or eyelids are touched; pupils still quite dilated, but today the patient both sees and hears imperfectly; a portion of the parotid gland, under the left ear, has become painful and swollen; he passed two large stools without consciousness. Every now and then he utters a plaintive cry, as if suffering from some internal pain. *Gum-solution; Half Lavement of Bark.*

23. Nearly in the same state as yesterday. The face is agitated and pale, and exhibits the same irritability when touched; the child is now more easily roused, and drinks when a fluid is given to him; skin now very warm; pulse 134; the cough is increasing; he does not now cry, unless when touched. *Cont. remed.*

25. The patient has passed a very agitated night, constantly crying and moaning; tongue and lips quite clean; the skin is not very hot, and the pulse has fallen to 128; the respiration is quick, nasal, and seems a little laborious; coughs much; has passed one stool; the pupils still continue dilated. *Gum-solution; Ether Draught; Half Lav. of Quina.*

26. Pulse 130, very small; tongue moist and clean; skin of body or head not warm; passed one stool; the patient was much less agitated last night than the preceding; the respiration appears considerably troubled, and an eschar is forming, about the size of a crown-piece, on the sacrum. *Cont. remed.*

28. Not much agitated during the night; skin moderately warm; pulse 116; the eschar is in same state, not spreading; the patient coughs as before; no stool; the respiration is a little quick, but not oppressed. *Ether Draught; Half Lav. of Quina; Eschar to be dressed with Lint, moistened in a Solution of Chlorine.*

30. Last night, and the night before the child was delirious, and this evening he was unable to recognise his mother; pulse very small and feeble; skin cool, rather cold; respiration short, not very hurried, 40; no stool; a purulent discharge has taken place from both ears. *Contin. remedia.*

Oct. 1. The child lies in an extreme state of prostration; the skin is cool; pulse imperceptible; pupils strongly dilated. In other respects his condition does not differ from that of yesterday.

2. At the visit this morning, we found our little patient in a dying state; pulse quite gone; respiration convulsive, &c.

Body examined on the 3rd.

The body was extremely emaciated, and the extremities were inflexible. In the abdomen the external surface of the intestinal tube appeared quite healthy; the stomach was contracted to a very high degree, and totally concealed under the false ribs; the

small intestines presented, externally, a dark-blue tint. The stomach and intestines contained a small quantity of yellow fluid, and the lining membrane of the latter was perforated by a great number of small ulcerations; the brain did not present any remarkable appearance, if we except some increased vascularity of its arterial and venous branches.

RUBEOLA COMPLICATED WITH ANGINA STRIDULOSA.

T. F. a boy 12 years of age, habitually enjoying good health, and of a sanguineous temperament, entered the hospital on the 12th of July, 1833. The boy has had neither hooping-cough nor small-pox. About four days ago he was seized with an abundant bleeding at the nose, which was followed by anorexia and fever, with some cough and pain in the region of the larynx: the eruption appeared on the following day, and continued to run a regular course.

15. This is the third day of the eruption: the face and limbs are covered by red patches; there is very little fever, but considerable thirst. The patient complains of pain in the left side of the chest; the abdomen and head are free from any uneasiness; he coughs a good deal, and the character of the cough is altogether peculiar, being excessively sonorous and dry, like that of angina stridulosa; the characteristic is most remarkable during inspiration, which is attended by a harsh, hoarse, loud whoop, as in croup. The patient experiences some pain about the larynx; and on examining the back of the mouth we find the pharynx red and injected. Six leeches were applied to the neck before the child's admission. *Tepid bath*; *Cataplasm to the neck.*

17. General appearance good; very little fever; skin moderately warm; pulse 112; the pain and redness of the pharynx are diminished, but not the cough, which retains its harsh croupy character; the voice has been almost extinguished for the last two days. *Infusion of Mallows*; *Lav. Emollient.*

19. The eruption of measles still persists on the face and limbs, but is getting pale; no fever; skin moist; pulse 110; the state of the voice and cough continue precisely the same as before; examined chest and found pulmonary organs quite healthy. *Infus. Malv.*; *Solution of Gum*; *Lavement.*

21. The eruption is gone to-day. The cough is not so sonorous as before, but is still dry, harsh, and accompanied by sifflement. The chest was again examined and found respiration natural; no râle; skin cool; pulse calm, 96; there are still some few spots of redness in the pharynx. *Infus. Malv.*; *Lavement of Starch.*

23. The cough still persists; is dry, but has almost lost its barking character; the voice still remains altered and dull; redness of pharynx is now entirely gone; respiration heard sounding in every part of the chest; pulse in evening 113, now (morning) 104. *Inf. Malv.*; *Gum mixture, with* 1 *gr. of Kermes mineral.*

25. General state favourable. The character of the cough alters but very slowly. It now commences to show a little moistness, and less sonorosity, but up to the 1st of July there remained some hoarseness and huskiness of the voice. *Cont. remedies.*

From this period the health of the child was perfectly restored; he ate and slept well; but still coughed a little, and the cough retained its character of hoarseness up to the 1st of August, when he left the hospital.

We have selected this case of measles because it presents an example of the complication of angina stridulosa, a disease which has often been mistaken for croup by the inexperienced or careless practitioner. In fact, true croup is very rarely witnessed in connexion with eruptive complaints, as small-pox, scarlatina, or measles. M. GUERSENT, physician to the children's hospital, whose experience on this subject is most extensive, has seen croup co-existing with small-pox on three occasions only, and once with scarlatina. Small-pox is often complicated with angina stridulosa, or with another species of false croup, a laryngo-trachitis, which is nearly as fatal as true croup, and generally mistaken for it. In this latter disease the voice is changed and dull, and the cough painful, and very dry, but not barking: on examining the body after death, we find the edges of the glottis, and portions of the larynx and trachea, covered with oblong, round, or linear spots of a gray or livid colour, as if they had been cauterized with muriatic acid. In the complication of an eruptive disease with angina stridulosa, the cough is excessively like that of croup, but the affection is never of a dangerous nature, or one requiring any very active measures. It is more frequently seen attending measles than either small-pox or scarlatina. In the present case the peculiar cough was very striking, marked, and evidently depending on the

extension of the inflammation to the pharynx and larynx, producing complete aphonia, which lasted for a considerable time. The innocent nature of the affection was also well proved in the course of the disease; the barking character of the cough was gradually lost, although no treatment of any kind was employed, because M. Guersent wished to show the pupils that this inflammation was perfectly different from croup, not dangerous, and capable of being resolved by the unaided efforts of nature. Perhaps it was owing to this inactivity that the cough retained its hoarse character much longer than is usual in similar cases.

MEASLES ATTACKING THE SAME INDIVIDUAL THREE TIMES CONSECUTIVELY; THE LAST ATTACK COMPLICATED BY SMALL-POX AND PURPURA.—DEATH.—AUTOPSY.

On the 3rd of July, 1833, a boy, four years of age, healthy-looking and strong, was received into the male ward. The child had been vaccinated and had the hooping-cough, but not the small-pox or measles. About nine days ago the premonitory symptoms of measles set in, such as coryza, sneezing, cough, &c. The eruption appeared, and ran its usual course. Yesterday, the 2nd, the child was seized with great agitation, delirium, excessive fever, dyspnœa, frequent cough, &c.; and a new eruption of the measles appeared, attended with an abundant discharge of pus from both ears. It should be remarked that this running from the ears had existed for a very long time, and that the child's family is very unhealthy, five out of seven brothers having died of different complaints. There is now a slight fever present; the skin not very warm, pulse 112; chest returns a healthy sound; but the child is listless and stupid. He has not spoken since the invasion of the disease. No evacuation for two days. *Warm-Bath; Purgative Lav.; Sinapisms to the Legs.*

It is unnecessary to follow the report of this second eruption of measles, as it proceeded without showing any bad symptoms or complication. The child continued to cough a good deal; and, on the 10th, an inflammation of the right eye set in, by which the sight was quickly destroyed.

On the 13th the child was again attacked with a violent access of fever: the skin became extremely hot; the face flushed; pulse full, 125. He complained of a tormenting thirst. The abdomen was free from pain, and there was no vomiting.

14. Diarrhœa. In the evening a fresh eruption made its appearance, with all the character of measles. *Lavem.; Warm-Bath; Six Leeches behind the Ears.*

Up to the 16th the eruption proceeded with the characters of measles, and was so considered by all who saw the case. The fever and agitation were always considerable; the pulse small and quick, varying from 130 to 140; cough. On the evening of the 16th the patches became suddenly elevated, particularly on the arms; and the pustules of small-pox could be distinguished on the face and extremities. The groups of elevated spots were now everywhere mixed with purpura, and many of them contained a bloody ichor. The face was much flushed and swollen, presenting an erysipelatous appearance: delirium at night. *Blister to Thighs; Sinapisms to Legs; and Lav. of Bark.*

17. To-day the pulse has fallen to 112, and the heat and fever have diminished. The appearance of the small-pox has been attended with considerable amelioration in the general state: there was no delirium last night; thirst less. This is the fifth day, that is, if we regard (as M. Guersent is now inclined to do) the eruption which appeared on the 13th as that of small-pox. The inflammation of the skin is now much diminished, but the eruption has a very bad character: the pustules are scattered in groups over the body, and it is difficult to say if many of them are true pustules or not,—they are flat and imperfect: they are intermixed, in various parts, with large blue patches and petechial spots. They are best marked on the back, round the edges of a blister which has been there applied. The child continues much agitated, but has no delirium or pain of head or abdomen.

18. To-day the boy is fast sinking into a comatose state: the eruption has not made the slightest progress; the pustules are quite pale and flat. In the afternoon the coma became more pronounced, convulsions set in, and the child died at 4 o'clock p. m.

Body examined on the 19th.

Cavity of Chest.—The lungs are pale anteriorly; there is some adhesion of the right lung at the summit to the parietes of the thorax; the whole substance of this organ contains a number of disseminated small dark liver-coloured spots, of hard tissue; between the fingers they give a sensation quite different from that of tubercles, being solid, but not so hard; the left lung, at the base, is engoued and hepatized; the pericardium contains one ounce and a half of clear fluid; the living membrane of the trachea is not much in-

jected, but the left bronchial membrane is very red (perhaps the effect of cadaveric imbibition); the internal surface of the œsophagus is pale; here and there some small spots of the mucous membrane are thickened and elevated, but not softened; it also contains some bright purple petechiæ.

Abdomen.—The stomach is full of fluid; the mucous membrane is of a pale yellow-white colour, and very much softened; it also contains several petechial spots: great and small intestines healthy.

NON-PROFESSIONAL CIRCULAR.

Several correspondents have requested that we would publish the following card and circular. We cannot, however, comply with the wishes of "*An Enemy to Regular' Quackery.*"

"Mr. Marsden, Member of the Royal College of Surgeons, and of the Royal Institution, Senior Surgeon to the Free Hospital, Greville-street, and one of the Surgeons to the Western City Dispensary, 2, Thavies Inn, Holborn-hill; at home daily till 1 and after 6; also at 41, Threadneedle-street, from 4 till 6."

"Sir,—Through the repeated solicitations of many gentlemen and families residing in the central and eastern parts of the metropolis, I have been induced to apportion a part of my time to regular attendance in the City, and for which purpose I have taken rooms at 41, Threadneedle-street, where I attend for the purpose of consultation from 4 to 6 o'clock every day, excepting Sundays; at the same time, I beg to inform you that I devote the same attendance at my own residence in Thavies Inn as heretofore, viz. from 9 till 1 every morning, and from 6 to 9 every evening. I am, Sir, your obedient servant,

"W. Marsden.

"2, Thavies Inn, Holborn, 1834."

Memorial of Medical Teachers.—*To the Editor of* The Lancet.—Sir,—I beg to draw your attention to the fact, in reference to the "Memorial of the Medical Teachers in London," presented to His Majesty, that Dr. Ryan, Mr. Dobson, Mr. Dermott, and myself, never saw this Memorial, and, consequently, never signed it. *Why* the Memorial was not sent for our signatures is a question I cannot answer.

Yours faithfully, John Epps, M.D.

89, Great Russell-street, May 15th.

Bransbyanatomica.—At a late examination of his pupils at *Guy's Hospital*, Mr. Bransby Cooper asked one of the class "What bone of the spinal column formed the greatest part of the medulla spinalis?" The question was answered, like many others, to the perfect satisfaction of the examiner, and the student was rewarded with a "gold medal" for his anatomical knowledge and general promptness of reply.

GUY'S HOSPITAL.

The patient on whom Mr. Morgan operated on the 8th instant, for the removal of a portion of the lower jaw, in consequence of the existence of osteo-sarcoma of that bone, although erysipelatous inflammation to a slight extent followed the operation, is doing well. Our report having been condensed from two accounts which we received from the hospital, the following words, in col. 2, page 285, line 16, "the condyloid process being dislocated from the temporal bone," were inserted by accident. The quill suture only was used, no adhesive plaster being employed.

CORRESPONDENTS.

Messrs. H. and S.—We feel regret on declining to comply with the request, but for reasons which may be ascertained in the present Number, the paragraph can only be inserted on the wrapper of the journal. Shall it be so inserted? Paragraphs in the body of the work are never made the subject of charge or payment.

The accounts of the St. Thomas's Hospital, the Bartholomew's Hospital, the King's College, the Leeds School of Medicine, the Dublin Lying-in Hospital, and several other medical school-distribution-of-prizes have been received. Their non-insertion is accounted for in another part of our journal.

The letter of a *Looker-on* did not reach us until the present Number was going to press. His appeal on the subject of his communication was not necessary, as he will see.

We fear that *Mr. Froggatt* is not worth powder and shot.

The letter of *A Spectator* next week.

Literary Intelligence.—In the press, An Inquiry into the Nature of Sleep and Death, with a view to ascertain the more immediate cause of death, and the better regulation of the means of obviating them, being the concluding part of the Experimental Inquiry into the Laws of the Functions. By A. P. W. Philip, M.D., F.R.S.

Errata.—In leader last week, page 282, last line but one, for "exertions carrying," read "exertions for carrying." In editorial remarks, page 283, line 8, for "employed the man," read "contracted with the surgeon."